This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

**Usage guidelines**

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

**About Google Book Search**

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

600048471U

1802 e 147.

# CIPHERING MADE EASY,

OR,

AN ATTEMPT TO RENDER SIMPLE AND INTERESTING

THE

# FIRST FOUR RULES

OF

# ARITHMETIC,

AND BY

NUMEROUS FAMILIAR EXAMPLES

TO POINT OUT THEIR APPLICATION TO THE EVERY-DAY AFFAIRS OF LIFE.

---

LONDON:
LONGMAN, REES, ORME, BROWN, GREEN, AND LONGMAN,
PATERNOSTER-ROW; W. DARTON, HOLBORN-HILL; E. FRY,
HOUNDSDITCH. LEEDS; BAINES AND NEWSOME.
PONTEFRACT; C. ELCOCK.

1833.

BIBLIOTHECA BODLEIANA

# ADVERTISEMENT.

The matter contained in the following Sheets has been prepared with an especial regard to juvenile comprehension, and with a view to lead the young scholar by gradual and easy steps to the knowledge of one of the most useful branches of school learning.

The Questions have been for some time used with advantage in a Girls' School under the Author's care; and it is hoped that their practical utility, and the simplicity and clearness of the illustrations, will render the "CIPHERING MADE EASY" deserving of its name, and worthy the notice of intelligent Teachers.

The KEY will have the advantage, it is thought, of more than common accuracy; the Questions having been worked many times over by some of the best Scholars in more than one large school.

# TO THE LEARNER.

If you were taken into a little Village School, and you were asked how many children were in the room, and you found out by counting that there were fifteen, you would say, "There are *fifteen* children here." If you liked, you could write the word fifteen on a slate, or, if you understood figures, you might set the number down in this manner—15.

If you were afterwards taken to a large School in a town, and the master were to say, "There are a hundred and twenty boys here;" you might write the words *one hundred and twenty*, but it would be much easier to put down the figures 120, if you only knew how to do it.

Suppose when you came home you should say to your father or mother, "I saw fifteen children in the village school: I wonder how many grown-up people there are in all the village;" and you should be told, *one thousand two hundred;* perhaps you would not know how to set *that number* down in figures. And if you should hear, that the town held *twenty thousand* people, you would be still more at a loss. Yet there are numbers much greater than these. London contains a million of people,—that is, a thousand times one thousand; and there are more than twenty millions of people in the kingdom we live in.

After reading this, perhaps you will say to yourself, "How can any body reckon up such large numbers? Can they be set down in figures?" This little book is intended to answer your questions, to teach you how to count and reckon up high numbers and work sums, and how to set down all numbers, whether large or small, in a proper manner. The art of doing these things is called ARITHMETIC or CIPHERING.

I have only mentioned numbers of children and numbers of people; but you will easily see, that numbering or counting is used for a great many things besides. We can speak of a hundred marbles, a thousand miles, and millions of grains of sand.

Before you can do any thing at figures, you must be able to count a hundred easily, and without making any mistake. You must learn too, as soon as you can, to put down all the numbers from one to a hundred on your slate. I have no doubt, your Teacher, or one of your school-fellows, will help you in making this beginning.

Have you ever taken notice, in counting, that you count ten at a time, and then begin again? As soon as you get to ten, you say

Eleven, which means One and ten;
Twelve, which means Two and ten;
Thirteen, which means Three and ten;
Fourteen, which means Four and ten;
Fifteen, which means Five and ten;

Sixteen, which means Six and ten;
Seventeen, which means Seven and ten;
Eighteen, which means Eight and ten;
Nineteen, which means Nine and ten;

Then you come to Twenty, which means Two tens; count on, and you come to Thirty, which means three tens;

Forty, which means Four tens;
Fifty, which means Five tens;
Sixty, which means Six tens;
Seventy, which means Seven tens;
Eighty, which means Eight tens;
Ninety, which means Nine tens;

When you come to ten tens, you have reached a Hundred. In this manner

Ten Ones or Ten Units make Ten: in figures thus 10
Ten Tens make a Hundred: in figures ........100
Ten Hundreds make a Thousand: in figures..1,000
Ten times a Thousand make Ten Thousand: in figures ..............................10,000
Ten times Ten Thousand make a Hundred Thousand: in figures..................100,000
Ten Hundred Thousand make a Million: in figures .........................1,000,000
Ten times a Million make Ten Million: in figures ........................10,000,000
Ten times Ten Millions make a Hundred Millions: in figures ......100,000,000

What I have here tried to explain to you is more shortly expressed in the following table. By a little attention you will see that the figure 4 expresses ten times as much every time it is moved one place further to the left hand. You may use any other figure you please; it will do exactly the same.

UNITS
4 Four.
TENS
4 0 Forty.
HUNDREDS
4 0 0 Four Hundred.
THOUSANDS
4 0 0 0 Four Thousand.
TENS OF THOUSANDS
4 0 0 0 0 Forty Thousand.
HUNDREDS OF THOUSANDS
4 0 0 0 0 0 Four Hundred Thousand,
MILLIONS
4 0 0 0 0 0 0 Four Millions.
TENS OF MILLIONS
4 0 0 0 0 0 0 0 Forty Millions.
HUNDREDS OF MILLIONS
4 0 0 0 0 0 0 0 0 Four Hundred Millions.

I shall now place nine *fours* in a line, and write over every *four* what it stands for. Any of the other figures would do quite as well.

| Hundreds of Millions. | Tens of Millions. | Millions. | Hundreds of Thousands. | Tens of Thousands. | Thousands. | Hundreds. | Tens. | Units. |
|---|---|---|---|---|---|---|---|---|
| 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

Examine this, and you will find it means, Four hundred and forty-four millions, four hundred and forty-four thousand, four hundred and forty-four.

As it is very likely you will not understand this at first, you had better read it over again when you have worked a few of the following Sums.

**Numeration** teaches us how to express any number in words. Here is an example in Numeration:

127.

One Hundred and twenty-seven.

**Notation** teaches us to set down a number in figures. This is an example in Notation:

Two Hundred and Thirty.

230.

---

## NUMERATION AND NOTATION.

Either read the following numbers to your teacher, or write them down in *Words* on your Slate.*

1. *a* 21
*b* 51
*c* 15
*d* 97
*e* 86
*f* 68
*g* 36
*h* 89
*i* 19
*j* 60
*k* 16
*l* 20
*m* 30
*n* 39
*o* 31
*p* 34
*q* 13
*r* 96
*s* 66
*t* 100
*u* 157
*v* 75
*w* 111
*x* 333
*y* 444
*z* 999
2. *aa* 911
*bb* 919
*cc* 765
*dd* 567
*ee* 56
*ff* 430
*gg* 340
*hh* 304
*ii* 99
*jj* 319
*kk* 91
*ll* 109
*mm* 191
*nn* 119
*oo* 911
*pp* 906
*qq* 609
*rr* 69
*ss* 690

Set down the following numbers by figures according to the method described above.

3 One hundred and seventy.
4 Three hundred and seventy.
5 Three hundred and seven.
6 Six hundred and eleven.
7 Nine hundred and nine.
8 Eight hundred and five.
9 Eight hundred and fifty.
10 Two hundred and eleven.
11 Four hundred and eight.
12 Four hundred and eighty.
13 Six hundred and eleven.
14 Six hundred and ninety-nine.

---

* The teacher will please to observe that these small letters and figures refer to the Key; and he will find it convenient to let the learner be accustomed, from the first, to annex them to his answers on the slate.

Read or write the following numbers in words:

15. *a* 1,000
*b* 1,001
*c* 1,010
*d* 1,100
*e* 1,101
*f* 1,110
*g* 1,111
*h* 2,002
*i* 2,020
*j* 2,200
*k* 2,220
*l* 2,022
*m* 2,222
*n* 14,000
*o* 14,011
*p* 99,000
*q* 40,819
*r* 93,316
*s* 9,316
*t* 4,890
*u* 10,000
*v* 14,000
*w* 11,090
*x* 13,600

Try if you can set down in figures the following numbers, one under the other; I mean Units under Units, Tens under Tens, Hundreds under Hundreds, and so on.

16. Six thousand and six.
17 Three Hundred and eleven.
18 Eleven thousand and twelve.
19 Ninety-nine thousand.
20 Four thousand eight hundred.
21 Eighty thousand four hundred.
22 Eight hundred and four.
23 Four hundred and eighty.
24 Eighty thousand four hundred and eighty.
25 Forty-four thousand and twelve.
26 Twelve hundred, or one thousand two hundred.
27 Eleven hundred, or one thousand one hundred.
28 Ninety thousand and sixty.
29 Nine thousand and sixty.

Express in words the numbers I am going to mention to you.

30 The common height of full-grown trees in this country is about 50 feet: yet there are palm-trees in the West-Indies 200 feet high.

31 The pyramids in Egypt measure about 450 feet in height; but there are buildings in Europe upwards of 500 feet high.

23 The top of Helvellyn, the highest mountain in England, is 3,055 feet above the level of the sea. There is a mountain in Ireland that is 3,404 feet high. Snowdon, in Wales, is 3,570 feet; and Ben Nevis, in Scotland, is 4,380 feet high.

33 The following are the heights of some other remarkable mountains in different parts of the world: Mount Etna, in Sicily, 10,946 feet; the Peak of Teneriffe, 12,358 feet; Mount Atlas, 12,500 feet; Mount Blanc, 15,630 feet; Mouna Roa, in the Sandwich Islands, 16,474 feet; Chimborazo, in South America, 21,451 feet. But the loftiest peak of the Himala, in Thibet, is said to be 26,462 feet.

---

Give these numbers in figures :

34 There are said to be *six thousand* species of flies, and *seven hundred and sixty* of butterflies, each different from the rest.

35 There are about *Five hundred and forty three* kinds of beasts; *Two thousand three hundred and seventy two* kinds of birds, and *Three hundred and sixteen* kinds of reptiles.

36 Fishes are wonderfully prolific. The tench lays *One thousand eggs;* the carp *Twenty thousand;* and the cod has been known to produce *Nine million, three hundred and eighty four thousand.*

37 There is a kind of thistle which bears above one hundred flowers, each flower containing from three hundred to four hundred seeds: so that a single seed may produce a crop of *Thirty-five thousand* thistles in one season.

38 In the year 1811 the following account was taken of the number of persons in the chief towns in England. Read it to your teacher, till you can do it readily.

| | | | |
|---|---|---|---|
| London, | contained | 1,050,000 | people |
| Manchester, | .. | 98,573 | .. |
| Liverpool, | .. | 94,376 | .. |
| Birmingham, | .. | 85,753 | .. |
| Bristol, | .. | 76,433 | .. |
| Leeds, | .. | 62,534 | .. |
| Plymouth, | .. | 56,060 | .. |
| Portsmouth, &c. | .. | 48,355 | .. |
| Norwich, | .. | 37,256 | .. |
| Deptford, &c. | .. | 36,780 | .. |
| Sheffield, | .. | 35,840 | .. |
| Nottingham, | .. | 34,253 | .. |
| Bath, | .. | 31,496 | .. |
| Newcastle uponTyne | .. | 27,587 | .. |
| Kingston upon Hull, | .. | 26,792 | .. |
| Leicester, | .. | 23,146 | .. |

39

### IN SCOTLAND.

| | | | |
|---|---|---|---|
| Edinburgh, | contained | 102,987 | people |
| Glasgow, | .. | 100,749 | .. |
| Paisley, | .. | 36,722 | .. |
| Dundee, | .. | 29,616 | .. |
| Aberdeen, | .. | 21,639 | .. |

If you have a high number to express in figures which you find not very easy to do, you may use the following method.

Write down in a line as is done below :

H. M. for Hundreds of Millions.
T. M. for Tens of Millions.
M. for Millions.
H. T. for Hundreds of Thousands.
T. T. for Tens of Thousands.
T. for Thousands.
H. for Hundreds.
T. for Tens.
U. for Units.

| H. M. | T. M. | M. | H. T. | T. T. | T. | H. | T. | U. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 4 |

Then suppose you are bid to put down in figures,

One hundred and twenty Millions, two thousand anp four.

You must put down 1 under H. M. because it is 1 Hundred Millions.

Set down 2 under T M. because there are 2 Tens of Millions, or Twenty Millions.

Set down 0 under M. because there are no Millions

Set down 0 under H. T. because there are no Hundreds of thousands.

Set down 0 under T. T. because there are no Tens of Thousands.

Set down 2 under T. because there are 2 Thousand.

Set down 0 under H. because there no Hundreds.

Set down 0 under T. because there are no Tens.

Set down 4 under U. because there are 4 Units or Ones.

| H.M. | T.M. | M. | H. T. | T. T. | T. | H. | T. | U. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 4 |

If you try these figures by *Numeration*, you will find they make up the number you wished for.

Set down in figures,

40 Eighty eight thousand.
41 Eighty thousand eight hundred.
42 One million.
43 One million; eight hundred thousand & eighty.
44 One million; eleven thousand and nine hundred.
45 Eight millions; eight thousand and eight.
46 Eight millions; eight hundred and eight thousand.
47 Eight millions, eight thousand, and eight hundred.

48 Read the following numbers, or write them on a slate: they are the distances of the principal planets from the sun.

| | | |
|---|---|---|
| Mercury, ...... | 36,973,282 | miles. |
| Venus, ....... | 69,088,240 | — |
| Earth, ....... | 95,513,794 | — |
| Mars, ........ | 145,533,667 | — |
| Jupiter, ....... | 496,765,289 | — |
| Saturn, ....... | 911,141,442 | — |

Set down in figures

49 Five millions; sixty six thousand and twenty.
50 Eleven thousand, four hundred.
51 Fifty six millions, six thousand and eleven.
52 Fifty four millions, six hundred and eleven.
53 Eleven millions, six thousand and ninety nine.
54 Twenty millions, six hundred and eleven thousand.
55 Nine hundred & eleven millions, three thousand.
56 Twenty six millions, seven hundred and sixty six thousand, three hundred and sixty.
57 Four hundred millions.
58 Eleven hundred millions.

A quarter, or a fourth part, is set down in figures in this manner .......................... $\frac{1}{4}$
A half, or two quarters, is set down in this manner ................................ $\frac{1}{2}$
Three quarters are set down in this manner .... $\frac{3}{4}$

Express the following numbers in Words:

59 *a* $2\frac{1}{2}$
*b* $9\frac{1}{4}$
*c* $3\frac{3}{4}$
*d* $5\frac{1}{2}$
*e* $5\frac{1}{4}$
*f* $7\frac{1}{4}$
*g* $8\frac{1}{2}$
*h* $6\frac{1}{4}$
*i* $4\frac{3}{4}$
*j* $3\frac{1}{2}$
*k* $9\frac{1}{2}$
*l* $4\frac{1}{2}$
*m* $2\frac{3}{4}$
*n* $7\frac{1}{2}$
*o* $5\frac{3}{4}$
*p* $9\frac{3}{4}$
*q* $72\frac{1}{2}$
*r* $15\frac{1}{4}$
*s* $36\frac{1}{2}$
*t* $44\frac{1}{4}$
*u* $38\frac{3}{4}$
*v* $52\frac{1}{2}$

Express these numbers in figures:

60 Twenty-four and three quarters.
61 Seventy-six and a half.
62 Ninety-two and a quarter.
63 Eighty-seven and three quarters.
64 Fifty-six and a half.
65 Nineteen and a quarter.
66 Thirty-nine and three quarters.
67 Sixty-seven and one fourth.
68 Eighty-four and three fourths.
69 Seventy-nine and a half.
70 Fifty-five and a fourth.
71 Twenty-five and one quarter.
72 Ninety-four and three quarters.
73 Seventy-eight and a half.
74 Eighty-one and one fourth.
75 Sixty-nine and three fourths.
76 Fifty-one and a half.
77 Fifty-three and a quarter.
78 Twenty-nine and three quarters.
79 Sixty and a quarter.
80 Fifty-eight and a half.
81 A hundred and three quarters.

# SIMPLE ADDITION.

If you were asked how many five and four make, and you did not know at first, you could find out by counting on your fingers; and you could tell how many ten and seven are, in the same manner. But if a person were to give you a hundred and thirty-five nuts, and a hundred and fifty-six nuts to one of your play-fellows, and then three hundred and seventy-one nuts to some other child, it would take you a very long time to count how many there were in all. But when you have learnt ADDITION, you will be able to reckon up much higher numbers than these in a shorter time than it would take you to count one or two hundred. Addition teaches us to put two numbers, or more than two numbers, together, so as to make one number, which is called adding them together.

1 How many are 5, and 2, and 8, and 9, added together?

2 Add 4, 5, 6, 3, and 8 together.

3 Add 2, 9, 5, 4, and 3 together.

4 If in a garden there are 9 apple trees, 4 plum trees, 5 cherry trees, and two pear trees; how many trees are there altogether.

5 How many will 13, and 9, and 8, make?

6 Add 6, 9, and 5, to 22.

7 Add 31, 10, 4, 5, and 6 together.

8 Suppose John has 18 marbles, William 10, Joseph 12, and Henry 5; how many will there be if they put them altogether in a ring?

9 There are 20 shillings in one pound: how many shillings are there in 5 pounds?

10 Add 12, fifteen, fourteen, twenty-five, and 30 together.

11 Add 14, 18, 19, and 11, to thirty-seven.

12 There are 4 bunches of keys: the first has 4 keys, the second has 11, the third has 7, and the fourth has six: how many keys are there in all?

13 Add seven to twelve and twenty-one.

14 Add nineteen to eleven.

15 Add seven to twenty-four.

16 Add fifteen to twenty-five.

17 Add eleven to one-hundred and seven.

18 Add thirty-nine to ninety-nine.

19 In a school, there were 9 scholars in the highest class; eight in the next; six in the next, and six in the lowest: how many were there in the whole school?

20 A man had three sons who married: the eldest had eight children; the next had seven; and the youngest seven: how many grandchildren had he?

21 Add together twenty, and forty, and thirty.

22 If I gathered ten peaches from one tree, and thirty-six from another, how many did I get in all?

23 There were 40 books on one shelf, 30 books on another, and 130 in a closet: how many would there be if they were put altogether?

24 In a certain school, there are 180 boys, and 120 girls: what is the whole number of children?

25 If a man had a flock of one thousand sheep, and he bought seven hundred more: how many would he have then?

26 Add fifteen hundred to fifteen hundred.

27 A certain town contained seven thousand people; and in a few years' time there were as many more people in it: how many were there?

28 Several years ago, there were one million people in London; I suppose there are now four hundred and fifty thousand more: how many will that make?

---

The number found by adding other numbers together, is called the Sum, or the Total.

This is an example in Addition:

```
 246
 194
 232
 161
 459
 263
 201
 ———
1756  The Sum or Total.
```

Add up the figures in the first column to the right hand. They come to 26: put down 6, and carry 2 to the next column.

Now add up the second column, and remember to take in the 2 you carried. It comes to 35: put down 5 and carry 3.

Add up the third column, and take in the three you carried last. It comes to 17. As there are no more columns, you may put down 17, and the sum is finished.

29 4
3
8
1
9
6
9
3

30 1
2
3
8
6
9
2
3

31 6
4
5
4
3
6
9
2

32 72
36
94
27
42
38
61
8

33 15
91
30
94
29
65
20
15

34 84
25
19
14
22
23
71
44

35 26
19
22
33
81
71
67

36 24
58
67
55
26
18
19

37 78
49
50
8
64
53
83

38 26
98
32
65
43
81
19

39 19
21
43
28
48
36
71

40 83
77
89
92
63
43
38

41 69
99
35
55
48
62
23

42 87
98
95
58
63
36
41

43 65
14
17
85
4
26
92

44 42
35
64
13
86
99
25

45 58
19
26
89
72
60
32

46 268
483
924
109
263
921
459

47 639
541
263
578
438
296
884

48 482
489
529
264
498
239
164

49 If fifty-six pounds of hay, and sixty pounds of hay, be added together, how many pounds will there be ?

50 Add nine hundred and forty-one, twenty-one, forty, and eighty-three, to two thousand.

51 How many are seven times sixteen?

52 Add three hundred and twenty-one, one thousand and eight, twenty-nine, seventy, two thousand one hundred, and seventy-two, together.

53 Add nine hundred and forty-one, twenty-one, forty, and eighty-three, to eight hundred and sixty-one.

54 If a man one day walked thirty-six miles, the next day twenty-nine miles, the next day forty-two miles, the next day fifty-four miles, and the next day nineteen miles, how many miles did he walk in the five days?

55 How much is five times four hundred and ninety-two.

56 Add four hundred and ninety-six, seven hundred and two, and two thousand four hundred together.

57 Add four hundred and ninety-six; five thousand two hundred; two thousand one hundred and ninety-six; twenty-five; and eight hundred and seventy-three together.

58 Add forty-nine, thirty-eight, eleven, and fourteen, to twenty, and a thousand.

You are most likely able by this time to work Addition sums pretty quickly. Suppose you now take the sum I worked at first, and try to understand every part of it.

$$\begin{array}{r} 246 \\ 194 \\ 232 \\ 161 \\ 459 \\ 263 \\ 201 \\ \hline 1756 \end{array}$$

You know that the column at the right hand is Units. The figures in that column make 26. 26

means 2 Tens and 6 Units; so you put down 6 under the column of Units, and carry 2 to the column of Tens.

The Tens, if you take in the 2 Tens you carried, come to 35 Tens. 35 Tens is the same as 3 Hundreds, and 5 Tens. You put down 5 under the Tens, and carry 3 to the Hundreds.

The Hundreds, with the 3 Hundred you carried, come to 17 Hundred, or 1 Thousand, 7 Hundred. When you put down the 17, you find the sum is 1 Thousand, 7 Hundred, and 56.

| 59 | 60 | 61 | 62 | 63 | 64 |
|---|---|---|---|---|---|
| 729 | 88 | 543 | 645 | 86 | 4320 |
| 308 | 29 | 268 | 487 | 93 | 5561 |
| 14 | 41 | 923 | 623 | 48 | 2382 |
| 441 | 23 | 761 | 719 | 82 | 1634 |
| 177 | 16 | 965 | 263 | 86 | 921 |
| 235 | 20 | 578 | 542 | 93 | 860 |
| 963 | 29 | 639 | 781 | 49 | 1122 |
| 841 | 38 | 482 | 298 | 62 | 2869 |
| 728 | 75 | 786 | 432 | 94 | 1934 |
| 438 | 83 | 542 | 625 | 26 | 401 |
| 762 | 93 | 978 | 509 | 96 | 13 |
| 398 | 121 | 706 | 907 | | |

| 65 | 66 | 67 | 68 | 69 |
|---|---|---|---|---|
| 695 | 69 | 4963 | 8653 | 9268 |
| 438 | 30 | 8795 | 9242 | 7653 |
| 965 | 18 | 4832 | 6438 | 8921 |
| 384 | 92 | 6952 | 9432 | 6957 |
| 198 | 84 | 725 | 7621 | 88808 |
| 623 | 76 | 1008 | 19539 | 71441 |
| 951 | 84 | 8349 | 891 | 926 |
| 786 | 20 | 9643 | 14695 | 7540 |
| 232 | 45 | 5859 | 8754 | 148 |
| 538 | 18 | 2799 | 198 | 236 |
| 309 | 38 | 5573 | 59663 | 523 |

70 From York to Doncaster the distance is 37 miles; from Doncaster to Stamford, is 73 miles; from Stamford to London, 85 miles. How far is York from London, according to this statement?

71 Give the sum of the following numbers: 1309; 377; 4390; 9606.

72 Add up the following numbers: 440; 606: 660; 909; and 404.

73 Add two hundred to four times 481.

74 How many yards are there in seven pieces of cloth, each 52 yards long?

75 How many days are there in the first six months of the year?

76 If a person was thirty years old, forty years ago, how old is he now?

77 How much is twice three hundred and sixty, added to 941?

78 Give me the sum of the following numbers: 139,642; 47,805; 938,463; 7,649, and 110.

79 Add fifty millions, fifty thousand, fifty hundred, and fifty, together.

80 In a certain public building there are 194 windows in the centre, 60 windows in the east wing, and 62 in the west wing: what is the total number of windows in the building?

81 If I had four baskets of apples; the first basket containing four hundred apples; the next 331; the next 500: and the last 282: how many apples would there be in the four baskets?

82 Add together eleven thousand, eleven hundred, and eleven.

83 In a small hot-house, I reckoned 1020 panes of glass at the top, 340 on one side, 137 on the other, and 150 in front: how many panes were there altogether?

| 84 | 85 | 86 | 87 | 88 | 89 |
|---:|---:|---:|---:|---:|---:|
| 984 | 3424 | 2634 | 4328 | 9623 | 4695 |
| 321 | 183 | 9216 | 1962 | 4580 | 2624 |
| 896 | 903 | 3801 | 5438 | 721 | 8291 |
| 929 | 1965 | 7417 | 9021 | 6235 | 7430 |
| 544 | 4787 | 998 | 3694 | 7100 | 198 |
| 509 | 2438 | 62 | 5826 | 1438 | 540 |

| 90 | 91 | 92 | 93 |
|---:|---:|---:|---:|
| 54 | 246 | 426 | 263 |
| 69 | 376 | 384 | 842 |
| 42 | 824 | 196 | 984 |
| 89 | 965 | 967 | 79 |
| 42 | 787 | 983 | 43 |
| 94 | 459 | 557 | 842 |
| 78 | 408 | 963 | 360 |
| 16 | 325 | 482 | 365 |
| 9 | 763 | 760 | 149 |

| 94 | 95 | 96 | 97 |
|---:|---:|---:|---:|
| 438 | 742 | 15 | 198 |
| 549 | 389 | 99 | 268 |
| 262 | 267 | 16 | 149 |
| 388 | 558 | 14 | 326 |
| 797 | 327 | 82 | 741 |
| 463 | 296 | 40 | 806 |
| 896 | 843 | 98 | 19 |
| 545 | 719 | 28 | 260 |
| 709 | 832 | 65 | 800 |
| 838 | 928 | 9 | 90 |

98 It was lately computed that there were in England 697,353 families employed in agriculture; 923,588 families employed in trade and manufactures, and 391,450 families who were not employed in any of these ways. By adding these numbers together, you may find how many families were then living in England.

In books respecting Ciphering, you will sometimes meet with these marks, + and =.

+ means the same as ADD. Thus 4 + 2 + 6 means four, ADD two, ADD six.

= means, IS EQUAL TO. Thus 4 + 2 + 6 = 12, is read in these words: four, add two, add six, is EQUAL to twelve; that is, four, and two, and six, added together make twelve. It is very often more convenient to use the signs + and =, than to write the words ADD, and IS EQUAL TO.

99 What will be the sum of 20 + 40 + 30 + 95 + 17 + 9 + 100 + 603 + 60?

100 If I gathered 907 walnuts from one tree; 1130 from another tree; 609 from the third tree; 348 from the fourth; and 809 from the last: how many walnuts did the crop consist of?

101 In a certain book-case there are 6 shelves; on the first shelf there are 32 books; on the second shelf, 27; on the third, 26; on the fourth, 27; on the fifth, 18; and on the sixth, 15. I demand the total number of books in the book-case.

102 Find the amount of 509 + 60 + 30 + 469 + 34 + 309 + 90 + 390 + 40 + 14 + 64.

103 I bought a piece of stuff:—when I had cut off 23 yards, there were 8 yards left. What was the length of the piece when I bought it?

104 A gentleman was 35 years old when his daughter was born; she was 27 years old when she married. What was his age when she had been married six years?

105 There are 7 book-cases in a certain library: the first contains 53 volumes; the second, 146; the third, 207; the fourth, 243; the fifth, 199; the sixth, 267; and the seventh, 120. What is the total number of volumes in the library?

106 A hundred-weight contains one hundred and twelve pounds: how many pounds are there in ten hundred-weight?

107
81288
102634
29302
458659
6282986
348132
554994
449033
341028
7469
9985

108
582989
56322
1663
255686
814350
872960
2214327
5148018
296323
1057456
9487247

109
996434
5889718
6532682
1328001
8532679
9410087
2645686
3800883
2453267
8884575
1014430

110
862316
2523693
2189128
1293849
8508082
9263574
3403891
4278262
8679530
1286448
31135

111 A book was printed in eight volumes: 366 pages were put in the first volume; 391 in the second; 409 in the third; 484 in the fourth; 496 in the fifth; 368 in the sixth; 528 in the seventh; and 442 in the eighth volume. Reckon up the number of pages in the whole work.

112 A person once reckoned the number of lines in each book of "Paradise Lost," to be as follows. In the first book, 788 lines; in the second, 1055 lines; in the third, 742 lines; in the fourth, 1015 lines; in the fifth, 907; in the sixth, 911; in the seventh, 640; in the eighth, 653; in the ninth, 1289; in the tenth, 1104; in the eleventh, 914; in the twelfth, 649. Tell me the total number of lines in that poem, according to this reckoning.

113 A few years ago, the following statement was made of the population of each of the principal countries of Europe: What was the total population?

| | |
|---|---|
| British Dominions | 15,396,650 |
| Denmark and Norway | 2,750,000 |
| Sweden | 2,000,000 |
| Russia | 36,000,000 |
| Austria | 20,000,000 |
| Prussia | 5,200,000 |
| Germany | 24,000,000 |
| Holland | 2,220,000 |
| France and the Netherlands | 36,345,000 |
| Spain | 10,351,000 |
| Portugal | 2,550,000 |
| Switzerland | 1,800,000 |
| Italy | 12,000,000 |
| Turkey | 8,500,000 |

When you have any apples, I dare say you give some to your companions. If you cut an apple in half, you can give it to 2 boys, and if you cut it into quarters, you can give it to 4 boys, because there will be 4 pieces. If you cut 3 of your apples into halves, you can give away 6 pieces; if you divide them into quarters, you will have 12 pieces to give away. If you divide apples, or any thing else, into halves, the number will be twice what it was before. 4 articles will make 8 halves, and 6 articles will make 12 halves. If you divide things into quarters, there will be 4 times as many quarters as there are things. 4 apples or any thing else will make 16 quarters, 5 things of any sort will make 20 quarters.

Again, suppose a schoolfellow gives you 2 halves of an apple, or 4 quarters of an apple, it is the same as giving you a whole apple. If he gives you 10 half apples, you know that when they are put together they will be equal to just half as many whole apples; that is, they will make 5 apples. If there be 11 half apples, they will make 5 apples and a half. If your schoolfellow gives you 12 quarters, they will make just a quarter as many whole apples;

that is 3 apples. 13 quarters are 3 apples and a quarter; 14 quarters, are 3 apples and 2 quarters, or 3 apples and a half; and 15 quarters, are 3 apples and 3 quarters—

| | | |
|---|---|---|
| Now set down | One and a half | 1½ |
| | Two and three quarters | 2¾ |
| | Four and a quarter | 4¼ |
| | | — |
| | | 8½ |

Count the quarters, and you will find there are 6. 6 quarters of apples would make 1 apple and 2 quarters, or 1 apple and half another apple, which we we might put down in this manner, 1½ apple. 6 quarters of any thing make 1 and ½, so we put down the ½, and add 1 to the Units. The answer you see is 8½. Now try yourself to work these sums in the same way.

| 114 | 115 | 116 | 117 |
|---|---|---|---|
| 5 | 838 | 407½ | 1027½ |
| 4¾ | 967¼ | 962 | 365¼ |
| 3 | 909 | 351 | 1923 |
| 2 | 550 | 663 | 41¼ |
| 0½ | 505¼ | 367¾ | 9¾ |
| 9¼ | 497 | 495 | 1008 |
| 8 | 130½ | 872 | 940½ |
| 7 | 269¾ | 243¼ | 2398 |

118 What will the following numbers amount to if added together; five and a half, nineteen and a quarter, four and three quarters, eleven and a half, ninety-one, four and three quarters, and ten?

119 What is the sum of three and twenty, nineteen, eleven and three quarters, one thousand and forty-one, nine hundred and sixty, one hundred, five and a half, nine and one quarter, and eleven and three quarters?

120 If I went to gather plums, and got one peck of plums from one tree; one peck and a half from another; six pecks from the next; and three pecks and a quarter from the last: how many pecks of plums should I have altogether?

121 A butcher sent one of his customers 4 joints of meat; one joint weighed 17 pounds; another eight pounds and a quarter; another nine and a quarter; and another 12: tell me the weight of the whole.

122 Find the amount of 5½, 8¼, 6½, 9, 10¾, 20½, 60, 19¾, 12¼, 9¾, 4½.

123 Add the following numbers together: 3, 5½, 9½, 6¾, 9, 8½, 20, 3½, 9¼, 11¾, ½, ¼, ¾, and 1½.

124 What will the following numbers come to, if they are added together; 4½, 2¼, 3¾, 0½, 9½, 10, 12, 11½.

## SIMPLE SUBTRACTION.

In the room where I am writing there are 44 bookshelves. How many shelves will be left if 12 be taken away? This must be found out by a rule in Ciphering called SUBTRACTION, which shows how to take a smaller number from a greater one. Subtract means to take a part of something away.

1 Subtract 3 from 9.

2 Take 12 from 20, and tell me how many remain.

3 If a little boy has a dozen marbles, and loses 4 of them, how many has he left?

4 Subtract fourteen from twenty.

5 If a little girl had twenty oranges, how many would she have after giving 16 away to her brothers and sisters?

6 If I gave a little girl 5 apples, and told her to give two of them to her brother, how many might she take for herself?

7 If a schoolboy gains eleven tickets in a day, and has to forfeit three for talking, how many will he keep?

8 Take six shillings from ten shillings, how many will be left?

9 Suppose I set out to travel twelve miles, and I get into a coach, and ride five miles, how many miles have I to walk after I get out of the coach?

10 If a farmer had 16 fat sheep, and sold nine of them to the butcher, how many did he keep?

11 If I bought a book for eleven shillings, and, when I had used it a little, sold it for eight shillings, how much should I lose by it?

12 How much should I gain, if I could sell it for thirteen shillings?

13 Suppose there are twenty children at school, and four of them are sent home before the rest, how many will remain till the school breaks up?

14 If a man received eighteen shillings wages, and had to pay seven shillings for a pair of shoes, how much would he have left for his family?

15 Take nine from fourteen, and tell me how many remain.

16 How many will be left if I take twenty from fifty?

17 Suppose a little boy has a dozen (12) marbles, and loses three of them, how many has he left?

18 If I bought a score of oranges, and found that five of them were bad ones, how many good ones did I get? A score is twenty.

19 Subtract thirty-two from eighty-one.

20 From 92, subtract 28.

21 Subtract 32 from 81.

22 Joseph had a book given him, and it had 216 pages in it. When he had read fifty-one pages, how many more had he to read?

23 Suppose that in a large park there was a row of a hundred beautiful elm-trees; but one stormy night, the wind blew 13 of them down: how many were left standing?

That which is left, when one number is Subtracted from another, is called the REMAINDER, or the DIFFERENCE.

**An Example in Subtraction.**

| | | |
|---|---|---|
| From | 42985 | The Greater Number |
| Take | 11342 | The Less Number. |
| | 31643 | The Remainder or Difference. |

In this little Sum you begin at the right hand, and say, Take 2 from 5, and 3 will be left, or three will remain: then put down the 3.

Next say, Take 4 from 8, and 4 will remain: put down 4.

Take 3 from 9, and 6 will remain: put down 6.

Take 1 from 2, and 1 will remain: put down 1.

Take 1 from 4, and 3 will remain: put down 3.

The Remainder or Answer you see is 31643.

Examine the Sum now it is worked, and you will find, that we first take 2 Units from 5 Units, and put down 3 Units.

Next we take 4 Tens (or forty) from 8 Tens (or eighty), and put down 4 Tens (or forty).

Then we take 3 Hundred from 9 Hundred, and put down 6 Hundred.

We take 1 Thousand from 2 Thousand, and put down 1 Thousand.

At last we take 1 Ten Thousand (or Ten Thousand) from 4 Tens of Thousands (or Forty Thousand), and put down 3 Tens of thousands (or Thirty thousands).

| | | | | | |
|---|---|---|---|---|---|
| 24 294 | 25 768 | 26 234 | 27 9804 | 28 4456 | 29 90660 |
| 83 | 47 | 203 | 704 | 346 | 600 |

| | | |
|---|---|---|
| 30 796843210 | 31 543218000 | 32 1987654321 |
| 796843210 | 543208000 | 87654321 |

| | | |
|---|---|---|
| 33 459063210 | 34 246732100 | 35 4376200908 |
| 000000000 | 1100 | 4 |

36 678954321
743101

37 432876549
321524444

38 999999999
555544444

39 77777777
34343434

40 8888888888
5353535353

41 555555555
343434343

42 666333999
333000666

43 964756394
520312050

44 972682253
752460031

45 93434349
71121238

46 55555
11111

47 968792339
811112227

48 3394949
1133333

49 876867789
774456589

50 7668799
5454679

51 68677889
54456878

52 986776789
745674578

53 231905432
230000000

54 321905432
1600000

55 432190008
50004

56 495328765
5328765

57 495328765
494325650

58 9768438750
9068438750

But all the Sums in Subtraction are not quite so easy as these. Here is one a little harder.

| | | |
|---|---|---|
| From | 42412 | Greater Number |
| Take | 36154 | Less Number. |
| | 6258 | Remainder. |

You begin as you did before, at the right hand. 4 from 2? *I cannot take 4 from 2.* No, you cannot. But put 1 to the left hand side of 2 in this way—12; and say, 4 from 12—and you find 8 remain: put down 8. This is called borrowing ten, and you must borrow ten in the same manner, as often as the figure in the upper line is less than the figure below it. Take notice, that always when you borrow ten you must carry 1, and add it to the next figure in the lower line. So that, just now, I ought to have said, 4 from 2, I cannot: borrow ten, and say, 4 from 12 eight: set down 8, and carry 1. Then I work the other figures.

1 and 5 are 6; 6 from 1 I cannot; borrow ten, and say, 6 from 11, five: set down 5, and carry 1.

1 and 1 are 2; 2 from 4, two; set down 2.

6 from 2 I cannot; borrow ten, and say, 6 from 12, six: set down 6, and carry 1.

1 and 3 are 4; 4 from 4 nothing remains.

| | | | |
|---|---|---|---|
| 59 12186 | 60 423461 | 61 600000 | 62 522001 |
| 1087 | 42382 | 183268 | 126314 |
| 63 7274231 | 64 5298211 | 65 4234263 | 66 1062345 |
| 6148365 | 3199382 | 234264 | 73456 |
| 67 5232671 | 68 3290483 | 69 4236214 | 70 1242006 |
| 1242715 | 1160521 | 381423 | 653007 |

71 23698423196
4321634187

72 85429008218
65429008219

73 40000000000
39999999999

74 52982142978
19630

75 5748343043978
3247526994819

76 6523023418621
531429874213

77 8423962129635
7312973841621

78 49842169762380
20008232453809

79 3241621238129
3180396143286

80 54238214238692
32508104329793

81 80000000000000
68000014511210

82 3225632143896
9

83 If a Yarmouth fisherman caught 10,134 herrings in his nets, and intended to salt 5500 of them: how many might he send off to market fresh?

84 Suppose a vine produced 149 bunches of grapes, and the owner wished to dry 60 bunches, to use 15 while they were fresh, and to give 11 to his friends: how many might he cut and send to the fruiterers for sale?

85 If I have a box of oranges sent me, which contains 130, and find that eleven of them are spoiled on the road: how many shall I have to use and give away?

86 If a child were to buy a score of chesnuts, and roasted two every day for a week, how many would be left?

87 A gentleman once had a collection of 70 different sorts of choice flowers in his hot house, but in a few years, through the carelessness of the gardener, they were reduced to 36 : how many did he lose?

88 If a man set out on a journey of 100 miles, and got 89 miles on the first day by coach, how many miles would he have to walk?

89 Very large droves of cattle come from Scotland into England. If the head-drover sets out with 1360 bullocks, and sells 650 on the road, how many will he have to dispose of when he gets to London?

90 A large pigeon-house in Yorkshire was reckoned to contain 70 couple of pigeons. If 40 young ones were htached in a season, and 35 were taken for the kitchen, and 16 others shot by idle marksmen, how many would be left?

91 In the year 1750, England and Wales contained Six millions, four hundred and sixty seven thousand people: but in the year 1801, they contained Nine millions, one hundred and sixty-eight thousand people. What was the increase in the population of the country in those 51 years?

92 There are about seven hundred and fifty million of yards of cotton cloth, made in England in a year; of which about three hundred and sixty million of yards are sent out of the country: How many yards are kept for use at home?

93 England contains 32,342,400 acres of land: 25,632,000 of these are cultivated; but 3,256,400 acres, are hilly or marshy, or barren land, which is not fit for corn, pasture, or wood. Yet there is still a considerable number of acres, which might be brought into cultivation. To find how many, you must add together the quantity of cultivated land and of waste land, and subtract this amount from all the land contained in England.

You remember, I hope, what I told you in Addition at page 19, about the signs + and =. There is another sign, which means subtract: it is made in this manner, — ; so 12 — 5, means 12 SUBTRACT 5.

Use the sign $=$, and it will stand in this way, $12 - 5 = 7$; that is, 12, if you SUBTRACT 5 from it, leaves a remainder which is EQUAL to 7. By using these signs, we can save time, and express what we wish to say about numbers in little room. Thus $5 + 4 + 3 + 1 - 6 = 7$, means that if five, four, three, and one, be added together, and six be taken from the sum, seven will be left. But how much shorter and better it is set down by figures and signs!

Work the following sums.

94 $43{,}564 + 911 + 300{,}000 - 90{,}000$.

95 $3 + 9 + 19 + 43 + 365 + 70 - 100 - 20$.

96 $50{,}000 - 476$

97 $436 + 3{,}000 + 905 + 42{,}650 - 25{,}000$.

98 $2{,}630 + 42{,}000 + 26{,}000 + 190 - 50{,}000$.

99 $42 + 405 + 90 + 30 + 15 + 36 - 70$.

100 $110 - 92$.

101 $52{,}326{,}972 - 24{,}509{,}608$.

102 $100{,}000{,}000 - 90{,}900{,}900$.

103 By how many is a million more than a thousand?

104 If a person has a thousand pounds, and gives six hundred pounds to pay his debts, how much money will he have left?

105 Suppose a shepherd had four hundred sheep, and sold two hundred and fifty to somebody else: how many would he have then?

106 From ten million and twelve thousand, take twenty three thousand.

107 From nineteen million, take nineteen thousand.

108 Suppose the distance from England to America, to be three thousand miles, how far has a ship to sail, that is one thousand nine hundred and twenty one miles from England, on her way to America?

109 A few years ago, a gentleman planted a million of young forest trees. How many are still growing, if eighteen thousand nine hundred and forty-three are destroyed?

110 Add three hundred and forty-two, six thousand four hundred and ten, and two hundred and thirty together, and subtract the sum from ten thousand.

111 In some places a Fother of Lead weighs two thousand one hundred and eighty four pounds. How much is that less than a Ton, which weighs two thousand two hundred and forty pounds.

112 In a school of one hundred and eighty Boys, forty-nine of the Boys had rewards given them for good conduct. How many had no rewards?

113 Subtract two hundred, and twenty, from one thousand seven hundred and sixty.

114 If a farmer was going 14 miles to market, and when he had gone 6 miles, his horse fell lame and he left it at a house till his return: how many miles had he to walk.

115 William IV. was born in the year 1765, and began to reign in 1830. What was his age at that time?

116 The Emperor of Russia ascended the throne in 1825, at which time he was 29 years of age. When was he born?

117 The Emperor of Austria came to the throne, in the year 1792: he was born in 1768. How old was he when he began to reign?

118 6942329642380
241027600009

119 8924123241269
1298438421921

120 2126927142832
1025934232733

121 2623841384196
1129683269183

122 7623984196238
4168321498

123 159623219621
11211209643

124 413604123806
108754124632

125 100000000000
99999999999

126 781462382964
695062479426

127 239046060230
19836010321

128 3846281987239
141281249284

129 7000400042001
6000402420004

130 5212312149628
4213519684193

131 7869004238698
296939123

132 1238050678639
765381600500

133 6294138694161
5621829623896

134 The first six months in the year contain 181 days: there are 365 days in the whole year. How many days are there in the last 6 months?

135 Potatoes were first brought to Ireland in 1623, by Sir Walter Raleigh. How many years was that before the Union of the Irish Parliament with the British Parliament, which took place in 1801?

136 The number of people in Great Britain, in 1811, was 15,396,650, while in France, (with the Netherlands,) there were 36,345,000. By how many did the population of the French dominions exceed that of Great Britain?

137 In the year 1818, there were 78,000,000 pounds of candles used in this country. In 1829 there were 110,000,000 of pounds used. How many more pounds of candles were used in 1829 than in 1818?

138 In 1831, how many years had passed since the great fire of London, which happened in the year 1666?

139 The art of Arithmetic was brought to Europe from Arabia by the Saracens, in the year 991. How

long was that before the invention of printing, which is said to have been discovered in Germany in the year 1430?

140 If a farmer had 550 sheep at the beginning of the year, and they brought him 408 lambs in the spring; but in the summer he sold 390 sheep and lambs to the butchers, and in winter lost 11 by disease: how many would he have to begin the next year with?

141 The depth of all the rain which fell in London in the year 1807 was but 18 inches, but in 1816, there fell rather more than 32 inches. What was the difference?

142 North America was discovered by Columbus in 1492: how long ago was that? This question is asked in 1831.

Before you go any further, you must try to subtract halves and quarters. Take 1¼ from 4½, and 3¼ will remain. But if you wish to take 1¾ from 4½, perhaps you will feel a little at a loss. Yet it is easily done. We will say you have 4½ apples, and you wish to give 1¾ apple away. You are obliged to cut one of the whole apples into quarters, and then you have 3 apples and 6 quarters. I will set it down.

4½ apples = 3 apples and 6 quarters.
Then, From 3 apples and 6 quarters,
Take 1 apple and 3 quarters.

and 2 apples and 3 quarters remain.

The whole work may be more shortly set down in this manner.

4½
1¾
—
2¾

¾ from ½ I cannot: borrow 4 quarters and say, 3 quarters from 6 quarters, 3 quarters remain: put down ¾ and carry 1.

1 and 1 are 2: two from 4, Two.

Work the following sums yourself.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 143 | 11½ | 144 | 1¼ | 145 | 4½ | 146 | 5¾ | 147 | 1½ | 148 | 4¾ | 149 | 12½ |
| | 9 | | 0½ | | 1¼ | | 1¼ | | 1½ | | 3¾ | | 8½ |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 150 | 6¼ | 151 | 6¼ | 152 | 14¾ | 153 | 14¼ | 154 | 14 | 155 | 54 | 156 | 19 |
| | 5 | | 5½ | | 7 | | 7½ | | 7¼ | | 6½ | | 8¾ |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 157 | 42¼ | 158 | 19 | 159 | 50 | 160 | 11¼ | 161 | 12 | 162 | 500 |
| | 41¾ | | ¾ | | 6¾ | | 9½ | | 11¾ | | 99½ |

163 If I bought one pound of sugar, and returned half of it, how much should I keep?

164 If I gathered an apple, and gave three quarters of it to my sister, how much did I take for myself?

165 Suppose a cheesemonger cut a cheese into quarters, and sold one of the four pieces to one customer, and two pieces to another, how much would remain?

166 Cut 1 yard and a half from a piece of string that measures twenty yards, and how much will be left?

167 If a man went to his work at half past 6 in the morning, and left it again at a quarter before 12, how long would he work?

168 How much will remain if 11¾ be subtracted from 19¼?

169 Draw off four gallons and a half from a cask containing nine gallons of ale, and how much will be left?

170 If you wish to take an hour's walk and to be back by a quarter before eight; at what time must you set out?

171 If the cook bought three pints of milk, and let half a pint boil over into the fire; how much was left for breakfast?

# SIMPLE MULTIPLICATION.

I shall endeavour to shew you, that MUTIPLICATION is a short way of doing many Sums in Addition. Not far from me, there are 11 windows, with 12 panes of glass in each window. By putting down 11 twelves under each other, and adding them together, I can find how many panes of glass there are in all.

12
12
12
12
12
12
12
12
12
12
12
—
Answer 132 panes.

To find out the number of panes by Multiplication, I can say, if I know the Multiplication Table, 11 twelves are 132, which is the same number that I found out by Addition. If there were a great many windows, with many panes in a window, I should be obliged to work a Multiplication Sum.

This is the Multiplication Table.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Once | 1 | is | 1 | Twice | 1 | are | 2 | 3 | Ones | are | 3 |
| Once | 2 | is | 2 | Twice | 2 | are | 4 | 3 | Twos | are | 6 |
| Once | 3 | is | 3 | Twice | 3 | are | 6 | 3 | Threes | are | 9 |
| Once | 4 | is | 4 | Twice | 4 | are | 8 | 3 | Fours | are | 12 |
| Once | 5 | is | 5 | Twice | 5 | are | 10 | 3 | Fives | are | 15 |
| Once | 6 | is | 6 | Twice | 6 | are | 12 | 3 | Sixes | are | 18 |
| Once | 7 | is | 7 | Twice | 7 | are | 14 | 3 | Sevens | are | 21 |
| Once | 8 | is | 8 | Twice | 8 | are | 16 | 3 | Eights | are | 24 |
| Once | 9 | is | 9 | Twice | 9 | are | 18 | 3 | Nines | are | 27 |
| Once | 10 | is | 10 | Twice | 10 | are | 20 | 3 | Tens | are | 30 |
| Once | 11 | is | 11 | Twice | 11 | are | 22 | 3 | Elevens | are | 33 |
| Once | 12 | is | 12 | Twice | 12 | are | 24 | 3 | Twelves | are | 36 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4 Ones | are | 4 | 5 Ones | are | 5 | 6 Ones | are | 6 |
| 4 Twos | are | 8 | 5 Twos | are | 10 | 6 Twos | are | 12 |
| 4 Threes | are | 12 | 5 Threes | are | 15 | 6 Threes | are | 18 |
| 4 Fours | are | 16 | 5 Fours | are | 20 | 6 Fours | are | 24 |
| 4 Fives | are | 20 | 5 Fives | are | 25 | 6 Fives | are | 30 |
| 4 Sixes | are | 24 | 5 Sixes | are | 30 | 6 Sixes | are | 36 |
| 4 Sevens | are | 28 | 5 Sevens | are | 35 | 6 Sevens | are | 42 |
| 4 Eights | are | 32 | 5 Eights | are | 40 | 6 Eights | are | 48 |
| 4 Nines | are | 36 | 5 Nines | are | 45 | 6 Nines | are | 54 |
| 4 Tens | are | 40 | 5 Tens | are | 50 | 6 Tens | are | 60 |
| 4 Elevens | are | 44 | 5 Elevens | are | 55 | 6 Elevens | are | 66 |
| 4 Twelves | are | 48 | 5 Twelves | are | 60 | 6 Twelves | are | 72 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7 Ones | are | 7 | 8 Ones | are | 8 | 9 Ones | are | 9 |
| 7 Twos | are | 14 | 8 Twos | are | 16 | 9 Twos | are | 18 |
| 7 Threes | are | 21 | 8 Threes | are | 24 | 9 Threes | are | 27 |
| 7 Fours | are | 28 | 8 Fours | are | 32 | 9 Fours | are | 36 |
| 7 Fives | are | 35 | 8 Fives | are | 40 | 9 Fives | are | 45 |
| 7 Sixes | are | 42 | 8 Sixes | are | 48 | 9 Sixes | are | 54 |
| 7 Sevens | are | 49 | 8 Sevens | are | 56 | 9 Sevens | are | 63 |
| 7 Eights | are | 56 | 8 Eights | are | 64 | 9 Eights | are | 72 |
| 7 Nines | are | 63 | 8 Nines | are | 72 | 9 Nines | are | 81 |
| 7 Tens | are | 70 | 8 Tens | are | 80 | 9 Tens | are | 90 |
| 7 Elevens | are | 77 | 8 Elevens | are | 88 | 9 Elevens | are | 99 |
| 7 Twelves | are | 84 | 8 Twelves | are | 96 | 9 Twelves | are | 108 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 Ones | are | 10 | 11 Ones | are | 11 | 12 Ones | are | 12 |
| 10 Twos | are | 20 | 11 Twos | are | 22 | 12 Twos | are | 24 |
| 10 Threes | are | 30 | 11 Threes | are | 33 | 12 Threes | are | 36 |
| 10 Fours | are | 40 | 11 Fours | are | 44 | 12 Fours | are | 48 |
| 10 Fives | are | 50 | 11 Fives | are | 55 | 12 Fives | are | 60 |
| 10 Sixes | are | 60 | 11 Sixes | are | 66 | 12 Sixes | are | 72 |
| 10 Sevens | are | 70 | 11 Sevens | are | 77 | 12 Sevens | are | 84 |
| 10 Eights | are | 80 | 11 Eights | are | 88 | 12 Eights | are | 96 |
| 10 Nines | are | 90 | 11 Nines | are | 99 | 12 Nines | are | 108 |
| 10 Tens | are | 100 | 11 Tens | are | 110 | 12 Tens | are | 120 |
| 10 Elevens | are | 110 | 11 Elevens | are | 121 | 12 Elevens | are | 132 |
| 10 Twelves | are | 120 | 11 Twelves | are | 132 | 12 Twelves | are | 144 |

You will see by this Table, that 7 Sixes are 42 and that 6 Sevens are also 42. 4 Eights are the same as 8 Fours, and 9 Fives are the same as 5 Nines.

Here are 6 rows of dots, with 7 dots in a row:

• • • • • • •
• • • • • • •
• • • • • • •
• • • • • • •
• • • • • • •
• • • • • • •

Count these dots from side to side, and there are 7 sixes; count them from top to bottom, and there are 6 sevens; but count them which ever way you will, they make exactly 42, and no more. You may try putting down on your slate 9 times 3 dots, or 4 times 8 dots, and you will find the number is the same whether you count from the top to the bottom, or from side to side.

I wish you to take particular notice of this, because it is useful to know it. The highest numbers you can think of may be spoken of exactly in the same way. 100 times 20 is the same as 20 times 100; 120 times 32 is the same as 32 times 120; 1000 times 100 is the same as 100 times 1000; and so on.

1 Suppose William has eight bags of marbles, with 12 marbles in each bag, how many marbles has he in all?

2 How much should I have to pay for three dozen oranges, at one penny apiece.

3 If one fowl, ready for cooking, cost two shillings, how much would three couples of fowls cost me? (A couple means two.)

4 How much is a couple of dozen?

5 How many pence are there in a sovereign, or twenty shillings?

6 How many in a guinea, or 21 shillings?

7 How many farthings are there in a shilling?

8 What is the value of four pairs of stockings, at three shillings a pair?

9 If a little girl could earn five tickets a day at school, how many could she get in one hundred days?

10 How many hours are there in a week?

11 If I had nine baskets, and in every basket one hundred and five apples, how many should I have in all?

12 Suppose there were three heaps of apples, and in each heap one dozen apples, how many would there be in all?

13 If I bought five pieces of stuff, and each piece contained thirty yards, how many yards did I buy?

14 What is the product of eight multiplied by ninety?

15 How many are threescore and ten?

16 How many gallons of ale would fill eleven casks, holding nine gallons each?

17 How many pints of port wine would there be in one dozen bottles, if each bottle contained two pints?

18 There are 36 inches in a yard; how many inches are there in two yards?

19 Multiply 13 by 5.

20 How many are 8 times seventeen?

21 A woman had nine bunches of cherries, with sixteen cherries in a bunch: how many cherries had she in all?

22 Multiply fourteen by 12.

23 What number will five times three hundred make?

24 Sixteen ounces make a pound Avoirdupois: how many ounces will make eight pounds?

25 How many lines are there in a copy-book, containing 24 pages, if each page has eight lines in it?

26 How many pence are there in 13 shillings?

27 How many shillings are there in five pounds?

That which is multiplied is called the MULTIPLICAND.

The number we multiply by is called the MULTIPLIER.

The number found by multiplying is called the PRODUCT.

This is an Example in Multiplication.
Multiply 4523 by 7..

| | |
|---|---|
| 4523 | Multiplicand, |
| 7 | Multiplier, |
| 31661 | Product. |

The Sum is worked in this manner. 7 threes are 21: put down 1 and carry 2.

7 twos are 14, and 2 I carried, make 16: put down 6 and carry 1.

7 fives are 35, and 1 I carried makes 36: put down 6 and carry 3.

7 fours are 28, and 3 I carried make 31: put down 31.

| | | | | | |
|---|---|---|---|---|---|
| 28 | 9234120634<br>2 | 29 | 4320610405<br>3 | 30 | 6060420308<br>4 |
| 31 | 7082041091<br>3 | 32 | 12021090507<br>4 | 33 | 70803090050<br>5 |
| 34 | 90305060708<br>6 | 35 | 3021050708001<br>7 | 36 | 52167341208<br>1 |
| 37 | 70604050806<br>8 | 38 | 50706009107<br>9 | | |

If you wish to understand Multiplication better, you may do so with a little patient attention. I will set down my sum again.

| | |
|---|---|
| 4523 | Multiplicand, |
| 7 | Multiplier, |
| 31661 | Product. |

First, 7 threes are 21. 21 means 2 Tens and 1 Unit; you put down 1 Unit, and carry 2 Tens.

7 times 2 Tens (or 20) are 14 Tens (or 140) and the 2 Tens you carried make it 16 Tens (or 160), which is 1 Hundred, and 6 Tens: you put down 6 Tens (or 60), and carry 1 Hundred.

7 times 5 Hundred are 35 Hundred, and the 1 Hundred you carried makes 36 Hundred, which is 3 Thousand 6 Hundred: you put down 6 Hundred, and carry 3 Thousand.

Lastly, 7 times 4 Thousand are 28 Thousand, and the 3 Thousand you carried make 31 Thousand: put down 31 Thousand; and the Product is 31 Thousand 6 hundred and 61.

39 Multiply 964123 by 7.
40 Multiply 462389 by 2.
41 Multiply 624698 by 3.
42 Multiply 569827 by 4.
43 Multiply 834795 by 5.
44 Multiply 308943 by 6.
45 Multiply 630921 by 7.
46 Multiply 4926347 by 8.
47 Multiply 53402358 by 9.
48 Multiply 5003682 by 10.
49 Multiply 39624507 by 11.
50 Multiply 47896784 by 12.
51 Multiply 246001892 by 11.
52 Multiply 246001892 by 3.
53 Multiply 386942182 by 7.
54 Multiply 46943821453 by 8.
55 Multiply 584631725924 by 11.
56 Multiply 538020410321 by 4.
57 Multiply 382413625123 by 10.
58 Multiply 214911012381 by 7.
59 Multiply 220192428328 by 8.

60 Fifty balls of cotton may be bought for a shilling: how many would three shillings buy?

61 I bought a paper of pins; there were 12 rows; and in each row were three dozen pins: how many pins were there on the paper?

62 How many cabbage plants will the gardener want, in order to plant 15 rows, with 12 plants in each row?

63 There is a room with three windows, in each of which are twelve panes: how many panes are there in all?

This sign × means MULTIPLY BY. Thus $4 \times 5 = 20$, is as much as to say, 4 MULTIPLIED BY 5 EQUALS 20. If you remember the signs that we have used before, you will know how to read these figures off.

$$6 + 3 - 4 \times 7 = 35.$$

They mean, 6 ADD 3, SUBTRACT 4, and MULTIPLY BY 7, EQUALS 35.

I will set down a Sum by signs, and you shall work it afterwards, to see if I have set it down correctly.

$$238621 \times 11 = 2624831$$

Or, 238621 MULTIPLIED BY 11 EQUALS 2624831.

Work the following Sums:

64 $59{,}050 + 4{,}697 \times 4$.
65 $11{,}008 + 1{,}607 \times 9$.
66 $306 + 469 + 42 \times 5$.
67 $26 + 54 + 93 + 11 \times 6$.
68 $4 + 9 - 5 \times 3$.
69 $6 + 8 - 7 \times 8$.
70 $11 + 6 - 9 \times 2$.
71 $20 + 40 - 6 \times 1$.
72 $19 + 90 - 50 \times 7$.
73 $1{,}060 + 99{,}608 - 4{,}000 \times 3$.
74 $1{,}900 + 10{,}508 - 900 \times 4$.

75 4 × 3 + 8 — 2.
76 3 × 2 + 9 — 4.
77 213,900 × 5 + 23,054 — 46,300.
78 468,300 × 7 + 42,096 — 21,010.

79 12 — 1 × 3 + 40.
80 120 — 9 × 7 + 100.
81 3,144 —2,104 × 6 + 26,000.
82 5,000 —300 × 4 + 120.

When you can multiply pretty readily by one figure, you may have two figures, or more than two, in the Multiplier.

This is an example with two figures in the multiplier.

4688025 × 34
34

18752100 product of 4,
14064075 product of 30,

159392850 product of 34.

Here you multiply by 4 and then by 3. You multiply by 3 for 30; so that when you say, three fives are 15, you ought really to take 30 fives, which is ten times 3 fives. But you need not say 30 fives; for you learned in Numeration, that if you put a figure one place further to the left hand, you give it a tenfold value. This is the reason why, in multiplying here by the 3, you place the 5 under the Tens, and not under the Units.

The first line is then the product of 4, and the second line is the product of 30; and if you add them both together, they will make the product of 34. When there are Hundreds or Thousands in the Multiplier, you must go on in the same manner, only take care to put every lower line one figure further to the left hand, and add all the products up at last.

83 462382963 × 24.
84 42381925785 × 16.
85 35630424321 × 14.
86 29610435272 × 15.
87 12380941031 × 25.
88 77383653824 × 28.
89 82307042937 × 32.
90 39238134623 × 18.
91 50058381936 × 33.
92 28193136210 × 4.
93 46234102381 × 55.
94 26319007352 × 72.
95 38412759642 × 96.
96 47234832007 × 121.
97 24027613576 × 108.
98 63428548164 × 28.
99 12879651673 × 144.
100 80224606628 × 88.
101 64044820224 × 90.
102 53965167307 × 64.
103 27524178976 × 110.
104 48349623000 × 120.
105 25734954138 × 132.

There are several of these sums, in which the Multiplier is made up of two other numbers multiplied together. For instance, 15 is 5 multiplied by 3. In such sums, you may multiply first by one figure and then by the other in this manner.

Multiply 428231 by 15.

428231
5 × 3 = 15

2141155 product of 5.
3

6423465 product of 3 times 5, or 15.

The answer is however the same if worked in the usual way.

$$\begin{array}{r} 428231 \\ 15 \\ \hline 2141155 \\ 428231\phantom{0} \\ \hline 6423465 \end{array}$$ product of 15.

106 The shanks of buttons are made by a little machine, worked by a steam engine, at the rate of four score in a minute: how many could be done in six hours?

107 In a good season, two hundred and fifty bushels of potatoes have been got from an acre of land: how many bushels would sixteen acres yield at this rate?

108 In a certain poem there are 12 stanzas, in each stanza four lines, and in each line, on an average, 27 letters: what may we reckon to be the number of letters that would be used in printing this poem?

109 If a person's income be thirty-five pounds in the year, and he spends every year forty pounds, what will be the amount of his debts in four years' time?

110 If there are seventy-two links in one foot length of a certain chain, how many links would there be in ninety yards of it?

111 What is the difference between fifty dozen and thirty score?

112 How many are threescore and fifteen?

113 If a watchmaker had six score of gold watches, each of which was worth eighteen guineas, what would be the value of the whole number?

114 By how many does one hundred dozen exceed forty score?

115 A gold chain has been made, with 300 links, yet the whole length of the chain was not more than one inch: how many links would there be in three feet of such a chain?

116 How many lamps would there be in ninety swarms of fire-flies, each swarm containing 5600 of these beautiful insects?

117 2463167 × 53.
118 1821360 × 65.
119 1789614 × 81.
120 7692432680 × 95.
121 438647833 × 121.
122 893419028 × 635.
123 538690287 × 732.
124 296138365 × 499.
125 300049372 × 563.

Learners sometimes find it difficult to work a Sum in Multiplication, if it has naughts in the Multiplier.

Examine this Example:

```
    4563218 × 24600
      24600
    -------
    0000000
   0000000
 27379308
18252872
9126436
------------
112255162800
```

This Sum may be done without putting down two lines of naughts, if you take care to leave two places to the right hand in the first line, because the 6 in the Multiplier stands for Hundreds, and the 4 stands for Thousands. I shall shew the shorter way of working the Sum.

```
    4563218 × 24600
      24600
    -------
 2737930800
18252872
9126436
------------
112255162800
```

Here is an Example, with the naughts in t middle of the Multiplier.

2159678 × 420034  
420034

8638712  
6479034  
0000000  
0000000  
4319356  
8638712

907138189052

Now follows a shorter way of doing the sum. Y will find the answer is just the same.

2159678 × 420034  
420034

8638712  
6479034  
431935600  
8638712

907138189052

126 729886029 × 7081.  
127 2406712 × 204.  
128 1421632 × 1404.  
129 2390143 × 8203.  
130 463296148 × 62007.  
131 530863281 × 30404.  
132 32638236 × 8650780.  
133 642318317 × 6384100.  
134 43937955 × 6407107.  
135 4621428000 × 230400.  
136 7232130800 × 349810.  
137 7651477000 × 210000.  
138 358314590 × 256080.  
139 7534192300 × 384000.  
140 5381909286 × 752000.  
141 3280864753 × 849230.  
142 2415600237 × 393418.  
143 13417820 × 70348200.

144 Multiply one thousand four hundred and eighty-one, by two hundred and thirty-one.

145 Multiply four thousand six hundred, by eight hundred and forty-two.

146 Multiply one thousand and seventeen, by one thousand eight hundred and twenty-three.

147 Multiply seventeen thousand four hundred and twenty-three, by itself.

148 Multiply one thousand two hundred and thirty-four million, five hundred and sixty-seven thousand, eight hundred and ninety, by nine hundred and eighty-seven million, six hundred and fifty-four thousand, three hundred and twenty-one.

149 What number will eighteen times three hundred and forty-three make?

150 How many pence are there in thirty-six shillings?

151 What is the product of fourteen thousand five hundred and sixty-three, multiplied by twenty-nine?

152 If there are five thousand pins in a pound, how many pins will there be in forty pounds?

153 How many shillings will buy three hundred and forty-eight Bibles, if one Bible costs five shillings?

154 How many farthings are there in three hundred pence?

155 There are one hundred and twelve pounds in one hundred-weight of sugar: how many pounds are there in ninety-three hundred-weight?

156 If I multiply five hundred and forty-nine by twenty-nine, and twenty-nine by five hundred and forty-nine, what will be the difference between the two products?

157 If a person spends one hundred and eighty-three pounds every year, how much will he spend in thirty-two years?

158 How many inches are in twenty-one yards? Every yard contains thirty-six inches.

159 If you asked an old man how many years he had lived, and he said five times fifteen years, how many years had he lived?

160 How many shillings are there in one hundred and sixty-eight pounds?

161 If three thousand one hundred and forty be the Multiplicand, and eight hundred and thirty-three the Multiplier, what will be the Product?

162 Suppose I buy sixteen dozen pounds of candles, how many pounds of candles shall I have?

163 Multiply seven hundred and eighty-four by itself?

164 How many shillings would thirteen yards of cloth cost, if one yard cost eighteen shillings?

165 How many farthings are there in three hundred pence?

166 If there were twelve rows of apple-trees in a large orchard, and each row had one hundred and twenty-three trees in it, how many apple-trees were there altogether?

167 Bring one thousand pounds (in money) into shillings.

168 In a ton there are two thousand two hundred and forty pounds: how many pounds are there in five tons?

169 Find out how many pence there are in four hundred and thirty-eight shillings?

170 Bring eight hundred and thirty-four shillings into pence.

Multiply 5½ by 4.

$$\begin{array}{r} 5\frac{1}{2} \\ 4 \\ \hline 22 \end{array}$$

4 halves of any thing are 2 whole ones: put down nothing and carry 2. 4 Fives are 20, and 2 you carried make 22; which is the answer.

Multiply 3¾ by 5.

$$\begin{array}{r} 3\tfrac{3}{4} \\ 5 \\ \hline 18\tfrac{1}{4} \end{array}$$

5 times 3 quarters are 15 quarters. You know that 15 quarters are three whole ones, and three quarters over: so put down ¾ and carry 3. 5 Threes are 15, and 3 you carried make 18: put down 18, and the product is 18¾.

In sums of this kind you must remember, as I have told you before, in page 10, that there are always half as many whole apples as there are half apples. There are also a quarter as many whole apples as there are quarters of apples. And so on, of all other things as well as apples.

# SIMPLE DIVISION.

Four little boys had 300 yards of kite-string. As every one had a kite, they wished to divide the string equally among them. Another boy, who could do Sums in Division, told them they might have 75 yards a piece, and they found that was exactly right.

It is DIVISION which teaches us to divide a number of yards, or of other things, into several equal parts.

At page 35, you were told, that Multiplication is a short way of doing Addition. Division is a short way of doing many Sums, which we should else be obliged to do by Subtraction. The little boys who had kites wanted to know how much string they could take, exactly four times over, from 300 yards. Let us see if 75 yards was really the proper number.

There were 300 yards of String.
75 yards were given to the first boy;

225 yards were left.
75 yards were given to the second boy;

150 yards were left.
75 yards were given to the third boy;

75 yards were left.
75 yards were given to the fourth boy.

· · No more string was left.

By Division we find that there are 75 times 4 in 300, and we know from this, that there are 4 times 75 in 300. You read as much in Multiplication, at page 35, and we have just proved that it is so by Subtraction.

1 If two little boys have six oranges to divide between them, how many is each boy to have?

2 If there were three boys, instead of two, how many oranges would each boy have?

3 When eggs are cheap, you may get 24 for 12 pence: how many can you have for one penny?

4 How many twelves are there in twenty-four?

5 What is the half of fourteen?

6 Suppose I gave three yards of ribbon to two little girls, how much would each have if they cut it exactly in half?

7 What is the half of three?

8 If I rode half way to a town that is 12 miles off, how far was that?

9 To our market-town, and back again, is 5 miles: how far are we from it?

10 What is the half of seven?

11 How many sixes are there in twelve?

12 How many fours are there in twelve?

13 What is the half of twenty?

14 What is the half of nineteen?

15 What is the half of ten?

16 What is the quarter of twenty?

17 A groat is four pence. How many groats are there in eight pence?

18 How many groats in twenty pence?

19 What is the half of one hundred?

20 What is the quarter of a hundred?

21 What is the third of fifteen?

22 What is the third of one hundred and fifty?

23 What is the fourth part of eight hundred?

24 How many sevens make twenty-one?

25 Divide twenty-one by three.

26 How many times will nine go in forty-five?

27 Divide forty-eight by four?

28 If a person were to give thirty large apples to ten good boys, how many apples would each boy have?

29 Suppose five persons, in a journey, spent sixty shillings, and all paid alike, what did each person pay?

30 If the gardener set one hundred and forty-four cauliflower-plants in 12 rows, how many plants were there in one row?

31 Divide eighteen pence into six equal parts, and tell me how many pence there are in each part.

32 How many gallons of milk will twenty-four pints make, if eight pints make one gallon?

33 What is the third part of nine?

34 How many is half of thirty?

35 What is the quarter, or fourth part, of two dozen?

36 What is the quarter of two hundred?

The DIVIDEND is the number you divide.

The DIVISOR is the number you divide by.

The number found by dividing is called the QUOTIENT, or the Answer.

If any thing is over when the work is done, it is called the REMAINDER.

An example in Division.

Divide 17423 by 2.

Divisor. Dividend.
2 ) 17423

Quotient. ·8711 ·1 Remainder.

Here you begin at the left hand, and say, 2 in 1 will not go any times: put down nothing and carry 1. The figure you carry is placed to the left hand of the next figure in the Dividend, in this manner—17. So that you next say, 2 in 17 will go 8 times, and 1 over: put down 8, and carry 1.

Say, 2 in 14 will go 7 times: put down 7.

2 in 2 will go once: put down 1.

2 in 3 will go once, and one over: put down 1, and carry 1 to the Remainder.

37 2 ) 426042 38 2 ) 846028 39 3 ) 69030 40 4 ) 408048

41 5 ) 50555 42 3 ) 333333 43 2 ) 48484848

44 2 ) 246869 45 3 ) 276040 46 3 ) 812372

47 5) 763411 48 6 ) 532184 49 4 ) 341851

50 8 ) 215324 51 9 ) 234699

Division Sums are different from those in the Rules you have done, in this respect, that in working them we begin at the left hand. Let us go through another example.

Divide 94269 by 3.

Divisor. Dividend.
3 ) 94269
31423 Quotient.

The Dividend is Tens of Thousands. Then 3 in 9 Tens of Thousands, will go 3 Tens of Thousands of times: put down 3 Tens of Thousands.

3 in 4 Thousand, will go 1 Thousand times, and 1 Thousand over: put down 1 Thousand, and carry 1 Thousand to the Hundreds.

1 Thousand and 2 Hundred are 12 Hundred: say 3 in 12 Hundred will go 4 Hundred times: put down 4 Hundred.

3 in 6 Tens, or 60, will go twice Ten times, or 20 times: put down 2 Tens, or 20.

3 in 9 will go 3 times: put down the 3.

52 Divide 4719384 by 4.
53 Divide 8613821 by 3.
54 Divide 2001456 by 7.
55 Divide 398567231 by 2.
56 Divide 151540763 by 5.
57 Divide 1000000823 by 7.
58 Divide 93417845376 by 8.
59 Divide 62001873389 by 9.

So far, you have called the number which is left at last a Remainder. But this is not the best way, as I shall shew you. Suppose the four little boys with their kites, had had 301 yards of string, instead of 300 yards. Would you have said they might have 75 yards apiece, and that there was 1 yard over? That would be wasting a yard. If there is a yard over, each boy may have a quarter of a yard more. We will set it down both ways in figures.

boys yards
4 ) 301

Each boy has 75 yards, and there is 1 yard over.

boys yards
4 ) 301

Each boy has 75¼ yards.

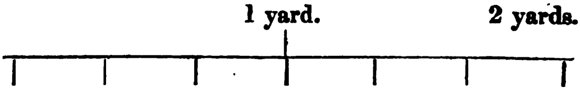
I dare say you think as I do, that the last plan of dividing the string is the best.

Suppose there were only 3 boys, and there was 1 yard over. Each boy might then have one third part of a yard more. A third part is put down in this manner, ⅓, and is called One Third. We will divide 301 yards of string among 3 boys, by a Division Sum.

boys yards
3 ) 301

Each boy will have 100⅓ yards.

If there are 2 yards over, each of the three boys must have a third part of 2 yards. Now 1 third part of 2 yards, is the same as 2 third parts of 1 yard. Cut 2 yards of string into third parts of a yard in this way.



Try whether ⅓ of the 2 yards, is not the same as 2 third parts of 1 yard. Two third parts are put down in this way, ⅔, and are called Two Thirds.

All this is explained to you that you may be able to do Division Sums still more completely than you have done. Instead of putting down the Remainder, you must divide that Remainder too, as well as the other figures. When you are dividing by 2, and there is 1 left at last, you must put down $\frac{1}{2}$. If you are dividing by 3, and there are 2 left, you must put down $\frac{2}{3}$. If you are dividing by 6, and there are 5 left, you must put down $\frac{5}{6}$, which is called Five Sixths; and so on of other numbers.

**Example.**—Divide 32148 by 7.

Divisor Dividend.
7 ) 32148

$4592\frac{4}{7}$ Answer 4592 & 4 sevenths.

60 Divide 42300565548 by 10.
61 Divide 32573476449 by 6.
62 Divide 28345533711 by 7.
63 Divide 84329112039 by 8.
64 Divide 155000862384 by 5.
65 Divide 4423816779000 by 11.

The sign which means Divide, is made in this manner, ÷ : thus $4 \div 2 = 2$, means 4, divided by 2, equals 2. Try if you can read off these figures and signs.

$$2 \times 3 + 4 \div 2 - 1 = 4.$$

They mean, 2, multiply by 3, add 4, divide by 2, and subtract 1, equals 4.

Sometimes figures are placed in this manner, $\frac{45}{7}$—to shew that 45 is to be divided by 7.

Work the following Sums:

66 $684207 43921 \div 9.$
67 $43911634288 \div 12.$
68 $11547832699 \div 12.$
69 $45900703262 \div 7.$
70 $71345239614 \div 4.$
71 $15434671239 \div 8.$
72 $101001433425 \div 10.$
73 $842615392844 \div 6.$
74 $55973102015 \div 2.$
75 $75382175628 \div 1.$

# LONG DIVISION.

When the Divisor is a higher number than 12, you will not be able to do the Sum by one line of figures. You must do it by what is called LONG DIVISION.

Here is an Example:

Divide 3246 by 13.

Divisor. Dividend. Quotient or Answer.
13 ) 3246 ( 249$\frac{9}{13}$
26
——
64
52
——
126
117
——
9 = $\frac{9}{13}$

You work in this manner. Begin at the left hand, and consider how many times 13 will go in 32. After trying once or twice, you will find out that it goes two times: you put a 2 in the Quotient, up at the right hand of the Dividend. Multiply the Divisor, 13, by 2, and put down 26 under 32. Subtract 26 from 32, and 6 remains.

Bring down the next figure, 4, from the Dividend, and say, 13 in 64 will go 4 times: put down 4 to the Quotient. Multiply 13 by 4, and put down 52 under 64. Subtract it, and 12 remains.

Bring down the next figure, that is the 6, from the Dividend, and say, 13 in 126 will go 9 times; put down 9 to the Quotient. Multiply 13 by 9, and put down 117 under 126. Subtract it, and the Remainder is 9.

As there are no more figures to bring down from the Dividend, the Remainder 9 EQUALS $\frac{9}{13}$, or 9 thirteenths.

76 46234193 ÷ 13.
77 28762381 ÷ 17.
78 45302378 ÷ 19.
79 14002389167 ÷ 31.
80 842386232l2 ÷ 37.
81 72312456781 ÷ 53.
82 57823978120 ÷ 49.
83 8238621478835 ÷ 59.

When the Divisor is made up of two other numbers multiplied together, you may divide first by one number and then by the other. This is a shorter way of working the sum than by Long Division, though the answer is the same both ways, as I shall show you.

Divide 42389 by 24.

$$24\left\{\begin{array}{l} 4\,)\,42389 \\ \times\ \overline{\phantom{10597'1}} \\ 6\,)\,10597'\,1 \end{array}\right.$$

$$\cdot 1766'\,1 \times 4 + 1 = 5 = \frac{5}{24}$$

$$24\,)\,42389\,(\,1766\frac{5}{24}$$

24

183
168

·158
144

·149
144

$$\cdot\cdot 5 = \frac{5}{24}$$

If you work Division sums by two numbers, you will often have two Remainders, and you must learn this rule for finding the true Remainder: "Multiply the last Remainder by the first Divisor, and add in the first Remainder." This you see is what I have done.

84 14593210923 ÷ 88.
85 42371923562 ÷ 81.
86 32172175033 ÷ 49.
87 27242023823 ÷ 27.
88 11201624381 ÷ 84.
89 212314077793 ÷ 121.
90 423752841236 ÷ 45.
91 3245624238145 ÷ 108.
92 293452078219 ÷ 54.
93 320361011538 ÷ 99.
94 632812392651 ÷ 100.
95 142320478422 ÷ 120.
96 4869734143 × 685 ÷ 20.
97 246501 + 96573 × 3 ÷ 2.
98 468709 ÷ 42 + 2694085.
99 4000 × 2000 + 4305862 ÷ 3.
100 28 ÷ 2 × 43 + 70.
101 12 ÷ 2 × 12 + 50.
102 9900 ÷ 99 × 11 + 423.
103 1107 ÷ 9 × 10 + 2430.
104 672 — 72 × 23 ÷ 6.

I shall now take down again the Long Division sum I worked in page 56, that I may give you some further explanations.

$$
\begin{array}{rrl}
13\ ) & 3246 & (\ 200 \\
 & 2600 & \quad 40 \\
\cline{2-2}
 & & \quad 9\frac{9}{13} \\
 & 646 & \\
\cline{3-3}
 & 520 & \quad 249\frac{9}{13} \\
\cline{2-2}
 & 126 & \\
 & 117 & \\
\cline{2-2}
 & 9\frac{9}{13} &
\end{array}
$$

13 in 3 thousand 246, will not go 1 thousand times, so I cannot put down any thousands in the quotient.

13 in 32 hundred will go 2 hundred times: put down 200 for the quotient.

2 hundred times 13 are 26 hundred: put down 2600.

2600 subtracted from 3246, leaves 646 still undivided.

13 in 6 hundred and 46, will not go 1 hundred times, but 13 in 64 tens and 6, (or 646) will go 4 tens of times, put down 40 in the quotient.

4 tens of times (or 40 times) 13, are 52 tens, or 520, put down 520.

520 subtracted from 646, leaves 126 not yet divided.

13 in 126 will not go 1 hundred times: in 12 tens and 6 (or 126) 13 will not go ten times; but in 126, 13 will go 9 times: put down 9 in the quotient.

9 times 13 are 117: put down 117.

117 substracted from 126, leaves 9 not yet divided.

The 13th part of 9 units is the same as 9 13ths of 1 unit: put down $\frac{9}{13}$ in the quotient.

The entire quotient is 2 hundred, 40, 9, and 9-13ths, or 249 $\frac{9}{13}$

If you compare this working of the sum with the other, you will find very little difference between them. The second way of doing the sum is the best for making you really understand it; but the first is the shortest and easiest way for practice.

105 312350020023 by 65.
106 423585692155 ÷ 42.
107 869232153367 ÷ 98.
108 42395214237 ÷ 101.
109 552386271450 ÷ 89.
110 20365239678 ÷ 204.
111 563562784321 ÷ 78.
112 845232027867 ÷ 241.
113 6304262789238 ÷ 137.
114 8265000236271 ÷ 156.
115 438627869389 ÷ 432.
116 62436392786 ÷ 511.
117 32267824625 ÷ 234.
118 723782378171 ÷ 1008.
119 270332395312 ÷ 3012.
120 82392785236 ÷ 981.
121 602345276381 ÷ 783.
122 42653792762 ÷ 765.
123 543217532526 ÷ 1118.

124 How many shillings are there in a thousand pence?

125 How many hundred-weights (of one hundred and twelve pounds each,) are in 146,389,001 pounds of iron?

126 Divide ten millions of inches, in such a manner as to find how many yards, and then how many miles, they would make? A mile contains 1760 yards.

127 A Ton weighs two thousand two hundred and forty pounds: how many tons are there in 24,387,621,340 pounds?

128 Bring 3024 farthings into pence.

129 Bring 5060 pence into shillings.

130 Bring 8420 shillings into pounds.

131 Divide five hundred thousand by twenty-nine.

132 How many times 8499 will make two hundred millions, three hundred and eighty-nine thousand, one hundred?

133 In 1,862,432 ounces Avoirdupois, how many pounds?

134 In Peru, in 1720, there was so dreadful a plague, that 300,000 persons died in three months. Allowing 30 days to each month, how many persons, on an average, died in a day?

135 If a carpet, that contains 132 square yards, measures 11 yards across, what is the length of it?

136 By a machine contrived for the purpose, 50,000 pins' heads can be made in an hour. How many is that in a quarter of an hour?

137 From a single pound weight of raw cotton, a thread has been spun that measured 132 miles in length. How many pounds' weight would be required to make a thread, of the same fineness, long enough to go round the world, or 24,876 miles?

138 There are in England and Wales, about 300 furnaces for smelting iron, and they produce altogether seven hundred and eighty thousand tons in a year. How many tons, on an average, does each produce in a week?

Suppose a person copies 200 pages in 10 days, page consisting of 37 lines: how many lines he write in a day?

If 10,000 copies of a book are printed in one of six days, how many are printed in a day?

A little book contains 216 pages: 18 of the are printed on one side of a sheet of large : how many sheets are used in making the ?

Europe contains a surface of 199,512,595 e miles: and its population in 1811 was estimated 9,112,650. How many square miles, on an ge, are there for each person to live upon?

If 25 buttons were put on a boy's suit of clothes, nany suits might be furnished out of six gross tons? A gross is twelve dozen.

There are 24 sheets of paper in a quire; how quires are there in 48,000 sheets?

What is the third part of 180,000?

It is said that two thirds of the people of France able to obtain animal food; the population of e is about 32,000,000. Find what number is irds of it.

The surface of the earth contains nearly 200 ns of square miles, three fifths of which is d with water. Find the number of square of land; and the number of square miles of

The human heart beats about 4500 times in r; how many times is that in three quarters hour?

A person in health breaths about 1200 times hour. How often in a minute?

A gentleman's poultry yard produced in one year eggs. Supposing he had twenty hens, how on an average did each of them lay in the

A reel of sewing cotton contains 300 yards. nany such reels would make a line that would re round the earth?

152 If thirty-six score and twelve yards of calico be given to 61 poor women, how many yards will fall to the share of each?

153 If two hundred and twenty-eight patients in an hospital were allowed half a loaf each, per day, in how many days would they have had 41,610 loaves?

154 How long would 28,000 gallons of water serve 500 men at the rate of half a gallon a day?

155 How many loaves would be required for a company of 150 soldiers, if they must have one third of a loaf a piece?

156 114596042380 ÷ 4238.
157 769242300080 ÷ 7692.
158 100086211145 ÷ 9561.
159 695996258314 ÷ 4006.
160 492968838417 ÷ 6958.
161 100000000000 ÷ 9083.
162 368004508641 ÷ 4653.
163 586354126910 ÷ 28605.
164 314742695563 ÷ 39841.
165 267048398621 ÷ 26705.
166 384928165411 ÷ 69817.
167 892386994821 ÷ 86228.

If there are noughts at the right hand of the Divisor, you will make your work shorter by cutting them off. But you must cut off just as many figures also from the right hand of the Dividend, and bring down those figures at last to the right hand of the Remainder. I shew you a sum worked both ways, that you may see the answers are both alike.

Divide 456230045 by 125000

$125,000\ )\ 456230,045\ (\ 3649\frac{105045}{125000}$
375
·812
750
·623
500
1230
1125
$\cdot 105045 = \frac{105045}{125000}$

$125000\ )\ 456230045\ (\ 3649\frac{105045}{125000}$
375000
812300
750000
623004
500000
1230045
1125000
$105045 = \frac{105045}{125000}$

168 Light comes from the sun at the rate of twelve millions of miles in a minute. How many minutes does it take for a ray of light to reach our earth, which is about ninety-six millions of miles from the sun?

169 It has been said that a cannon-ball, going at the rate at which it flies from the mouth of a cannon, would be more than 22 years in reaching the sun. How many miles would it have got in a year?

170 Sound travels only at the rate of about 13 miles in a minute. If therefore I see a flash of

lightning at a distance, and do not hear the clap of thunder till half a minute afterwards, how far off may I conclude the thunder-storm to be?

171 If I were to ask a school-boy, how many Sums he could work in an hour, he would perhaps answer, "Why that depends upon the length of the Sums. I have done 20 Sums in an hour: yesterday, I got through 40 in one hour; and to-day I have done 30; but the day before yesterday I only did 10." The boy might have answered the question more cleverly, by saying, that on an average he could work 25 Sums in an hour: because

20 Sums in 1 hour,  
40 Sums in 1 hour,  
30 Sums in 1 hour,  
And 10 Sums in 1 hour,

Make 100 Sums in 4 hours.

If he could work 100 Sums in 4 hours, it follows that, on an average, he could do them at the rate of 25 sums in 1 hour: for 100 ÷ 4 = 25. In figures:

Hours. Sums.  
4 ) 100

25 Sums in 1 hour.

172 Suppose a ship sailed 100 miles one day, 98 miles the next, 70 the next, 20 the next, 5 the next, and 35 the next: how many miles a day did she sail on an average?

173 A gentleman placed a bottle in the ground, with a funnel over it, out of doors, and measured the depth of the rain that fell into it with a glass vessel, called a rain-guage. In this way he found, that in the year 1807 there fell 18 inches depth of rain; in 1808, there fell 23½ inches; in 1809, there fell 24 inches; in 1810, 27½ inches; in 1811, 24½ inches; in 1812, 27¼ inches nearly; in 1813, 23½ inches. Find the average depth of rain that fell in a year.

174 If a person earned eighteen shillings one week; in another twenty-one shillings: and in another nineteen shillings, what was the average of his wages?

175 If a person spent 11 pounds in the first quarter of the year; 15 pounds, the next quarter; twelve pounds the next; and only ten pounds the last quarter; what was his average monthly expenditure?

176 How many score are there in 50 millions?

177 In England, Wales, and Ireland, there are 480 banks for savings. The sum of money deposited in these banks is fourteen millions, five hundred thousand pounds. The number of depositors (persons who put money into the banks) is four hundred and ten thousand. What is the average sum deposited by each person?

178 It is related that a carrier pigeon conveyed a letter from Babylon to Aleppo, which is 30 days' journey, in forty-eight hours. How much faster did the feathered messenger travel than his master would have done, supposing he were to travel 12 hours a day.

When you are a little forwarder in Ciphering, you will sometimes have occasion to do such Multiplication Sums as these: 120 × 2½; 24 × 3¼; 12 × 5¾. I did not say any thing to you about them in Multiplication, because you could not understand them until you had learned Division. I shall shew you how to do them now.

$$\begin{array}{rl}
120 & \times\ 2\tfrac{1}{2}. \\
2\tfrac{1}{2} & \\
\hline
240 & = 120 \times 2. \\
60 & = 120 \times \tfrac{1}{2}. \\
\hline
300 & = 120 \times 2\tfrac{1}{2}.
\end{array}$$

Here you first multiply 120 by 2, which gives 240. Then, you find the half of 120 by Division, or, which is the same thing, find out how many units there are in 120 halves. The half of 120 is 60. You add 60 to 240, and it makes 300, which is 2½ times 120.

I shall work another Sum, and leave you to find out the explanation yourself.

$$\begin{array}{l} 24 \times 3\frac{1}{4} \\ \phantom{2}3\frac{1}{4} \\ \hline 72 = 24 \times 3 \\ \phantom{7}6 = 24 \times \frac{1}{4} \\ 78 = 24 \times 3\frac{1}{4} \end{array}$$

Now multiply 12 by 5¾.

To multiply 12 by 5¾, you first multiply 12 by 5, which gives 60. Then you find out by Division, that 1 quarter of 12 is 3, and you know that 3 quarters of 12 must be 3 times as much, that is 9. You add 9 to 60, and find that 12 × 5¾ = 69. See the Sum worked:

$$\begin{array}{lcl} 12 & \qquad & 4\,)\,12 \\ \phantom{1}5\frac{2}{3} & & \phantom{4\,)\,1}\text{—} \\ \text{—} & & \phantom{4\,)\,1}3 = 1 \text{ quarter of } 12. \\ 60 = 12 \times 5 & & \phantom{4\,)\,1}3 \\ \phantom{6}9 = 12 \times \frac{3}{4} & & \phantom{4\,)\,1}\text{—} \\ \text{—} & & \phantom{4\,)\,1}9 = 3 \text{ quarters of } 12. \\ 69 = 12 \times 5\frac{3}{4}. & & \end{array}$$

But 3 fourths of 12, are the same as 1 fourth of 3 twelves, as you learnt in page 54.

$$\begin{array}{l} \phantom{4\,)\,}12 \\ \phantom{4\,)\,1}3 \\ \phantom{4\,)\,}\text{—} \\ 4\,)\,36 = 3 \text{ Twelves.} \\ \phantom{4\,)\,}\text{—} \\ \phantom{4\,)\,3}9 = \frac{1}{4} \text{ of } 3 \text{ twelves, or } \frac{3}{4} \text{ of twelve.} \end{array}$$

And you will generally find it most convenient, when you wish to know ¾ of a number, to multiply by 3 FIRST, and then to divide by 4. If you wish to find $\frac{5}{6}$ (5 sixths) of a number, multiply it by 5, and divide the product by 6. To find $\frac{8}{9}$ of a number, multiply by 8, and then divide by 9. If you understand this, you will easily work the following Sums.

179 Find $\frac{2}{3}$ of 92354.

180 Find $\frac{7}{8}$ of 119670.

181 What would be seven-eighths of 44327 ?

182 If I had 324 pieces of silk, each $\frac{3}{4}$ of a yard in length, how many yards should I have in all?

183 What would be the length of a certain walk, if it were paved with a row of 9957 flags, each seven eights of a yard in length?

184 What is seven-eigths of 55?

185 Multiply 43 by $\frac{2}{3}$.

186 What is two-thirds of 760?

187 If I planted 48 cuttings of geraniums, and two thirds of them died, how many lived?

188 Suppose the length of a voyage to the United States to be 3317 miles, how far has a ship sailed when she has got three-fourths of the way?

189 If a bankrupt owed his creditors 86445 pounds, and was able only to pay them two-thirds of his debt, what sum could he put into their hands?

190 If I borrowed 100 pounds, and have repaid three-quarters of it, how much do I still owe?

191 If I lent a man 50 pounds, and he never repaid me more than three-fifths of his debt, how much did I lose by him?

192 What is three-fifths of 550 miles?

193 If I were going to travel from London to Edinburgh, I should have travelled over $\frac{3}{4}$ of the distance when I got to Corbridge in Northumberland. Edinburgh is 372 miles from London: how far then is Corbridge from London?

194 An estate worth 5600 pounds, might be left to a gentleman, on the condition that he was to give three-eighths of it to his sister on her marriage: what would be her portion?

195 What is that number, of which 1308 is the third?

196 What is that number, of which 57630 is two-thirds?

197 What is that number, of which 572 is three quarters.

198 Suppose Alfred, Henry, and William, had a box of oranges sent them, which they divided equally among them, and that two of their shares put together were just 14, what number of oranges were sent them?

199 If a shopkeeper sold 24 yards of stuff, and found that it was just two-thirds of the piece, what was the number of yards he had at first?

200 What must be the income of that man, who always laid by three-eighths of it, and who spent 350 pounds?

201 If a man of thirty-three, married a woman who was just two-thirds of his age, how old was she?

202 What is that number of which 75 is three-quarters?

203 If two-thirds of an army fell in a certain campaign, and 8160 soldiers returned from it, what was the number that went to the war?

204 What is that number, of which 48,000 is four-sixths?

205 What is that number, of which 48,000 is two-thirds?

206 What is that number, of which 96,000 is three-twentieths?

207 If the length of two-thirds of a certain street be 534 feet, what is the whole length?

208 If a sister's fortune were only two-fifths of her brother's, and she had 2,400 pounds, what was his fortune?

209 37658702 × $3\frac{1}{2}$.
210 43089560 × $7\frac{1}{4}$.
211 46920500 × $12\frac{1}{4}$.
212 439000 × $20\frac{3}{4}$.
213 1100203 × $24\frac{1}{4}$.
214 2306000 × $4\frac{3}{4}$
215 30670 × $67\frac{1}{7}$

216 3650 × $4\frac{3}{4}$.
217 $3690\frac{1}{2}$ × $1\frac{1}{2}$.
218 $4370\frac{4}{8}$ × $12\frac{7}{8}$.
219 $1180\frac{2}{3}$ × $600\frac{1}{2}$.
220 $30\frac{1}{7}$ × $40\frac{4}{5}$.
221 1100806 × $200\frac{1}{5}$.
222 240600 × $159\frac{3}{4}$.

223 Suppose a farmer bought 5½ cart-loads of hay, each cart having 36 trusses in it, how many trusses did he buy ?

224 How many needles would there be in three boxes and a quarter, if each box contained 1,200 needles ?

225 Four hundred and thirty two pins are sold on a paper. How many pins would there be in three papers, and two thirds of another paper ?

226 If a ship sailed 52½ miles a day, on an average, how far did she get in 20 days ?

227 If a silver spoon weighed two ounces and four ninths of an ounce, how much would one dozen such spoons weigh ?

228 A man told me he had smoked three pipes a day regularly for twenty years. How many did he smoke in all ? You must reckon 365¼ days in a year.

229 How many square inches are there in a pane of glass which measures four inches and a half one way, and five inches the other way ?

230 What is the number of square inches in a pane of glass measuring 19½ inches by 17 ?

231 If a mason built a wall 5½ feet high, and ninety-nine feet long, how many square feet must he charge in his bill ?

232 How many square-yards are there in a carpet which measures 10½ yards, by 6¼ yards ?

233 If a man has to go three-quarters of a mile to his work, and returns home to dinner every day, how far does he walk in six days ? And how far in nine weeks, reckoning six working-days to the week ?

234 If a poor family eat three-quarters of a loaf of bread in a day, how much will they eat in nine weeks ? Here you must reckon seven days in the week.

235 A caravan will traverse the sandy desert at the rate of 2½ miles an hour, and eight hours a day. How long will it take them to go a distance of four hundred miles ?

236 Suppose a caravan had been out 28 days, and had taken two days out of that time for resting, what distance had they travelled, if they went at the rate of 2½ miles an hour, and seven hours a day?

237 If a person walks 2 miles and three quarters in an hour, how far will he get in 6 days, walking 8 hours a day?

238 A crop of eleven hundred bushels of potatoes has been got from two acres and a half of land. How many bushels was that from one acre?

239 Land is often measured by the pole or perch, which is equal to 5½ yards. How many poles are there in 5280 yards?

240 The swiftest race-horse that we read of could run at the rate of 7420 yards in 7 minutes and a half. How many yards did he run in a second?

241 How long could a ship's company of 65 persons subsist upon five hundred-weight of biscuit, on an allowance of six pounds per week to each man?

242 3½ yards of linen are enough to make a shirt. How many shirts could be made out of a piece of Irish, that measured 26 yards?

243 If it took three years and a half to make a voyage round the world, including the time spent in delays, and in refitting the ship, how many times might the voyage be made between the sixteenth and fifty-fifth years of a person's life? Take both in.

244 A bottle of wine is seldom more than one pint and three quarters. How many bottles might be filled from a cask containing 504 pints?

245 There are very nearly 365¼ days in a year. How many years are there in 73,050 days?

246 If a pane of glass, that measures 12½ inches one way, contains 106¼ square inches, what does it measure the other way?

247 If a piece of pavement contains 6,320¼ square feet of flag stones, and measures 65½ feet in breadth, what is the length of it?

If you ever have occasion to divide by such numbers as $5\frac{1}{2}$ and $2\frac{1}{4}$, you will not easily find out how often $5\frac{1}{2}$ or $2\frac{1}{4}$ goes in a number. The best way is, to bring both the Divisor and the Dividend into halves or quarters, and then divide in the usual way. To bring any number into halves, you must multiply it by 2; to bring it into quarters, you must multiply it by 4. Here are two Examples:

Divide 42418 by $5\frac{1}{2}$.

$5\frac{1}{2}$ ) 42418
2     2

Halves. 11 ) 84836 Halves.

Answer. ·7712 ,,4 $= \frac{4}{11}$

Divide 238921 by $2\frac{1}{4}$.

$2\frac{1}{4}$ ) 238921
4     4

Quarters. 9 ) 955684 Quarters.

Answer. 106187'1 $= \frac{1}{9}$

248 $962041 \div 6\frac{1}{2}$
249 $862478 \div 9\frac{1}{3}$
250 $2726384 \div 2\frac{1}{4}$
251 $3876539 \div 4\frac{2}{5}$
252 $4296241 \div 5\frac{3}{4}$
253 $1186277 \div 3\frac{1}{5}$
254 $2478639 \div 2\frac{1}{9}$
255 $70080063 \div 1\frac{5}{6}$
256 $622239 \div 12\frac{1}{2}$
257 $8763455 \div 6\frac{1}{3}$
258 $4121762 \div 11\frac{3}{4}$
259 $219699\frac{1}{2} \div 9\frac{1}{2}$
260 $3008271\frac{3}{5} \div 10\frac{1}{5}$
261 $7006201\frac{4}{9} \div 3\frac{8}{9}$
262 $743894 \div 11\frac{9}{10}$
263 $462478 \div 7\frac{3}{7}$
264 $1123014 \div 5\frac{1}{8}$
265 $2217684\frac{2}{7} \div 7\frac{1}{7}$
266 $6043001 \div 3\frac{3}{4}$
267 $679341 \div 2\frac{1}{12}$
268 $234500\frac{1}{5} \div 9\frac{3}{5}$

## PROMISCUOUS QUESTIONS
## IN SIMPLE MULTIPLICATION AND DIVISION.

1 How many yards are in 180 miles?

2 In 24,768,239 shillings, how many pounds?

3 Reduce 36,219,860 pence into pounds.

4 How many grains are there in 241 pounds Troy, if 5760 grains make one pound?

5 Reduce 8,247,869 pence to pounds.

6 In 246,934,217 farthings, how many pounds?

7 How many days will 8760 hours make? There are 24 hours in a day.

8 How many days are there in 144 years, reckoning three hundred and sixty five days and a quarter in a year?

9 Find how many hundred-weight there are in 2,410,000 pounds.

10 If a man travel one hundred and five miles every day, how many miles does he travel in a year, of three hundred and sixty-six days?

11 How many crowns are there in 8496 pounds?

12 112 pounds make a hundred-weight, and 20 hundred weight make a ton: how many pounds are there in forty-two tons?

13 If a man intended to make a journey of three hundred and ninety-six miles, in twelve days, how many miles must he travel every day?

14 How many hundred-weight are there in fifty-eight tons?

15 In 46,924,380 minutes, how many hours?

16 Reduce sixteen million, two thousand farthings, to guineas. 1008 farthings make 1 guinea.

17 Reduce four hundred and eighty-nine thousand and eighty sixpences to half-pence.

18 What number, multiplied by 144, will give four hundred and eighty-three thousand, eight hundred and forty, for the product?

19 In a piece of cloth, 33,692 nails long, how many yards?

20 In twelve bales of cloth, each bale containing twenty-five pieces, and each piece forty-three yards, how many yards?

21 Multiply twelve thousand, twelve hundred, and twelve, by eleven thousand, eleven hundred, and eleven.

22 How many sacks, of three bushels each, are in 32 chaldrons of coals? A chaldron is 36 bushels.

23 Find how many shillings there are in fifty-five guineas; and afterwards bring the shillings into pence and farthings.

24 There are two numbers: one is forty-two times six hundred and thirty-eight; the other eighty-five times seven hundred and seventy-one: what is the difference between them?

25 How many pounds will fifty bags of hops weigh, if every bag contains three hundred-weight & a half?

26 If I divide 21,240 by twenty-eight, and subtract the quotient from three thousand and eight, what remainder will there be?

27 Suppose 472 be a multiplicand, and 144 the multiplier, what quotient will be found if we divide the product by 16?

28 How many hundred-weights are there in 840 fother of lead, each fother being 19½ hundred-weight?

29 In twelve hundred-weight of steel, how many pounds? A hundred-weight of steel is 120lbs.

30 If a ship had been sailing at the rate of 25¾ miles in a day, for four days, how far would she have got on her voyage?

31 In this country, on an average, 1 person in 58 dies every year. What is the annual number of deaths in Great Britain, which is stated to contain 21,238,580 people?

32 If 200 hanks of yarn are spun from 1 pound of raw cotton, how many hanks could be made from 2000 pounds' weight of cotton?

33 In London, twenty-nine million gallons of water are daily supplied to the inhabitants. There are one hundred and twenty-five thousand houses, and other buildings, among which the water is distributed. What is the average number of gallons required for every building?

34 The Image which Nebuchadnezzar set up in the plains of Dura, was threescore cubits high. The cubit was 21 inches and eight tenths. Give me the height of the image in Feet.

35 If a person's yearly income be 366 pounds sterling,* and he spends only 360 pounds in twelve months, laying by the rest, how long will it be before he will have saved a whole year's income ?

36 If a person be a whole year out of employment, and contract debts during that time to the amount of 36 pounds, how long would it take him to pay it off, if he obtained a situation, with a yearly salary of 366 pounds, and saved 6 pounds per annum out of it ?

37 If one hundred thousand bricks are to be carted away in twenty-six days, how many must be fetched each day ?

38 The measurements of the Ark which Noah built were as follows: the length 300 cubits, the breadth 50 cubits, the height 30 cubits. Give these measurements in inches.

39 The population of Great Britain is stated at 21,238,580, and the number of parishes at 13,885. How many persons, on an average, belong to each parish ?

40 If a school of 30 children are to have one-eighth of a pound of plum-cake apiece, how many pounds must be provided ?

41 If two little girls had gathered 2256 nuts, and wished to divide them equally among their 14 school fellows and themselves, how many nuts would come to the share of each ?

42 How many dozen apples must I buy if I wanted to give one apiece to 360 school children ?

43 It would take 49 moons to make a body the size of the earth, and 1,377,633 earths to make up the bulk of the sun: how many times does the sun exceed the moon in bulk ?

---

* Sterling is here put after *pounds*, to shew that it means *money*, not *weight*; but it is sometimes put to signify *English* money, to distinguish from *Foreign*.

# REDUCTION.

If I want to know how many farthings there are in a sovereign, or how many sovereigns there are in a great many farthings, I must find it out by a Rule called Reduction.

If I want to know how many farthings there are in a pound, I must work my Sum by Multiplication, because, in a pound, there are 4 times as many farthings as there are pence, and 12 times as many pence as there are shillings.

Here is the working:

$$\begin{array}{rl} \text{In a Pound, there are } 20 & \text{shillings,} \\ 12 & \\ \hline \text{or } 240 & \text{pence,} \\ 4 & \\ \hline \text{or } 960 & \text{farthings.} \end{array}$$

This is a Sum in Reduction; and when it is done, as this is, by *Multiplication*, it is called Reduction Descending, because we *descend*, or come down, from money of a high value, to that which is lower.

It is by Reduction Descending, that we find how many pounds there are in so many hundred-weights, and how many yards in so many miles; because pounds are less than hundred-weights, and yards are less than miles: and we must *multiply* the miles and the hundred-weights, because they are fewer in number than the yards and pounds.

1 How many pence are there in 3s. 6d.? 2s. 8d.? 5s.? 3s. 3d,? 5s. 9d.? 3s. 7d.? 4s. 2d.?

2 How many shillings in £3 10s.? £4 8s.? £5 9s? £7 3s.? £7 15s,? £2 19s.? £11?

3 How many farthings in 7½d? 3¼d? 4½d? 5¾d.? 8½d? 1s. 4d.? 2s. 1d.? 2s. 6¼d.? 5s.?

4 How many halfpence in 5½d? 11½d? 3s.? 1s. 4½d? 4s. 2d.? 5s. 6d.? 3s. 11½d?

5 How many sixpences in 10s.? 12s. 6d.? 7s. 6d.? 13s.?

6 How many gallons in 4 ankers of brandy? in 9 firkins of ale?

7 How many inches in 9 feet? 12 hands? 2 yards?

8 How many grains, Troy weight, in 4 pennyweights? pennyweights in 3 ounces? ounces in 12 pounds?

9 How many pounds, Avoirdupois weight, in 2 quarters of a hundred-weight? quarters in 10 hundred-weights? hundred-weights in 5 tons? ounces in 3 pounds?

10 How many hours in 2 days? in 6 working-days? days in 3 weeks? weeks in 5 months?

If I want to find how many sovereigns there are in 960 farthings, I must do it by Division; and then the Sum will be called REDUCTION ASCENDING, because I must begin with the farthings, which are the lowest in value, and *ascend*, or go up to the pence, then to the shillings, and, last of all, to the pounds or sovereigns.

See the Sum worked.

4 ) 960 farthings.
12 ) 240 pence.
2,0 ) 2,0
1 pound or sovereign.

You will easily understand, that we may bring pints into gallons, and minutes into hours and days, in a similar manner.

11 Bring 40 pence, 81 pence, 93 pence, 79 pence, 100 pence, and 115 pence, each into shillings.

12 How many pence are there in 39 farthings? 29 farthings? 60 farthings? 71 farthings? 31 farthings?

13 How many pounds in 75 shillings? 93 shillings? 152 shillings? 51 shillings? 48 shillings?

14 If I had 100 pints of wine, how many quarts would there be, and how many gallons?

15 A certain form is 108 inches long: how many feet is that?

16 How many weeks are there in 84 days? 25 days? years in 37 calendar months? days in 48 hours? months in 25 weeks?

17 How many inches in 21 barley-corns? yards in 15 feet? inches in 36 lines? in 108 lines?

18 How many pounds Troy in 36 ounces? ounces in 72 penny-weights? penny-weights in 36 grains?

In working the examples which follow, you must think for yourself, to find whether they belong to Reduction Ascending, or Reduction Descending.

19 How many shillings are there in 12 sovereigns?

20 How many pence in 12 sovereigns?

21 How many shillings in 11 guineas?

22 How many shillings are there in 20 guineas?

23 How many shillings are there in 125 pounds and seven shillings?

24 How many pence are there in nineteen shillings and eleven pence?

25 If I were to give three shillings' worth of halfpence among a crowd of school-boys, how many boys could get one halfpenny each?

26 In 1769 farthings, how many pence are there?

27 In 442 pence, how many shillings and pounds?

28 In 1769 farthings, how many groats?

29 In 987 farthings, how many pounds, shillings, and pence?

30 In one million sixpences, how many pounds?

31 In 44,371 pints, how many barrels, Beer Measure.

32 If a butt of beer leaks half a pint in a day, how much will be left at the end of 12 weeks?

33 In fifteen shillings and eight pence three farthings, how many farthings?

34 If a servant has three five-pound notes given him to change into pence, how many pence must he bring?

35 How many farthings are there in 1s. 1d.?

36 How many pence in £1?

37 How many pence in 12s. 9d.?

38 How many shillings in £1391?

39 How many farthings are there in £100?

40 How many hours are there in 273 minutes?

41 What number of bushels make 9 chaldrons?

42 How many yards are equal to 3 miles and a half?

43 How many days are equal to nine weeks?

44 How many bushels are equal to 4 quarters?

45 What number of pecks are equal to 11 bushels?

46 How many pints are there in 3 hogsheads of wine?

47 How many pints are there in 3 hogsheads, 11 gallons, and one quart?

48 If I have nine casks of beer, each containing 18 gallons, how much have I in all?

49 If I buy a piece of diaper, measuring 25 yards, how many towels, each one yard and a quarter long, can I make of it?

50 In 2376 inches of cloth, how many quarters, and how many yards?

51 How many halfpence are there in £25?

52 How many pints are there in 5 gallons?

53 How many gallons are there in 2 firkins?

54 How many quarts in a barrel? in a hogshead? in a puncheon? in a butt? (Beer Measure.)

55 How many pints are there in a gallon? in 12 quarts? in an anker? in a rundlet? in a tierce? in a hogshead? in a puncheon? in a pipe? in a tun? (Wine Measure.)

56 How many pints are there in 12 quarts? in a gallon? a peck? a bushel? a strike, of three bushels? a coomb? a quarter? a chaldron? a wey? a last? (Dry Measure.)

57 Suppose a young person regularly lays by a penny a day, how much will it amount to in 4 years?

8 If a man begins to put by a shilling a week; when he is of age (that is, 21 years old), how much will he have saved by the time he is six and twenty?

59 If a girl spends just sixpence a week more than her wages amount to, how much will she be in debt at the end of the year?

60 What is the yearly income of that person who receives a shilling a day?

61 How many papers of sugar, containing a quarter of a pound each, would a grocer's boy put up from half a hundred-weight of sugar?

62 How many pills, of four grains each, can be made out of a lump of aloes, weighing an ounce and three quarters?

63 The bottles in which wine and beer are generally sold are called *Quarts*, and the smaller ones are called *Pints*. But the Quarts do not hold much more than a pint and a half, beer measure; nor the pints more than three-quarters of a pint, beer measure. How many such pint bottles then may be filled from a nine-gallon cask of beer?

64 How many quart bottles, such as are spoken of in the last question, from 5 such casks?

65 How many quart bottles from three such casks?

66 How many cans of milk, each half a pint, can the milk-woman sell, if she set out with two pails, each containing 3 gallons?

67 If a family use an ounce of tea every day, what weight of tea do they require for the year?

68 Suppose 100 men are employed in making a new road, and they get 22d. each per day: how much money will the surveyor have to pay in all in a week?

69 If one person rises at 6 o'clock and another does not rise till 7 o'clock, for 40 years together, how much time does the early riser gain?

70 How many barley corns make one foot? one yard? one fathom? A fathom is 6 feet.

71 How many yards make 1 furlong? 1 league? three leagues?

72 How many inches make one fathom?

73 How many inches make one quarter of a yard one Flemish ell? one English ell? one French ell?

74 How many pounds of old hay make a load? how many of new hay? how many of straw? (60 pounds of new hay, 56 pounds of old hay, or 36 pounds of straw, make a truss, and 36 trusses make a load.)

75 Sound travels at the rate of 1142 feet in a second: how far off is a flash of lightning, if we do not hear the thunder till one minute after we have seen the flash? The light will reach the eye in less than a second.

76 In children, the pulse beats about 120 times in a minute: how long has a child lived, when its pulse, going at this rate, has beaten one million of times?

77 How many seconds are there in an hour? a day? a week?

78 How many days are there in 13 lunar months?

79 How many days are there in 12 months of four weeks each?

80 How many grains are there in one dram? one scruple? one ounce? one pound? Apothecaries' weight.

81 How many drams in one pound? one stone of 8 pounds? one quarter? Avoirdupoise Weight.

82 How many ounces in a stone of 14 pounds? a quarter? a hundredweight? a ton? Avoirdupois Weight.

83 How many grains are there in one ounce? in one pound? Troy Weight.

84 How much magnesia must I buy if I want twelve doses, each weighing a scruple?

85 If in measuring a lane, I find it two hundred times the length of a cord which is eleven feet long, what is the length of the lane?

86 If a little girl has been picking raspberries for preserving, and has filled a half-pint basin eight times every day for six days, how much has she gathered in all?

87 If I want to buy six doses of rhubarb, weighing sixteen grains each; how much must I ask for?

88 If a grocer buys 1 cwt. of sugar, how many papers each containing half a pound can he divide it into?

89 If 16 children have gleaned a gallon and a half each, of wheat in the season, how many bushels have they collected in all?

90 How many inches are there in 36 yards, 3 quarters, and 2 nails?

91 How many inches are there in 1 furlong, 15 poles, and 3 feet?

92 How many pills, of a grain each, could be made from 1 pound, 10 ounces, and 15 pennyweights of aloes? How many boxes would they fill, with 30 pills in each box?

93 How many pint bottles could be filled from a puncheon of spirits? (See No. 63, page 79.) And how many pints, beer measure, does it contain?

94 How many poor families could be served with a peck of potatoes each, if fifty three bushels were distributed among them?

95 If the cook was told to put half a pint of currants into every tart, how many tarts could she make with three pecks and a half of the fruit?

96 A labouring man should work from 6 in the morning till 12 at noon, and from 1 in the afternoon till six in the evening. How many hours does he work in a year, allowing 6 days to the week?

97 If he is idle, and does not come to his work till 20 minutes after 6 for 5 months together; and yet leaves his work at the usual time, of how much time will he have robbed his master, reckoning one month with another to contain 26 working days?

98 Some smelting furnaces make 75 tons of iron in a week. If the blade of a knife takes one ounce of iron, how many blades could be made from the weekly produce of one of these furnaces?

In the rules that follow, you will have occasion for these Tables of Money, Weights, and Measures. You may read them over carefully now, and turn to them again afterwards, as often as you find it necessary.

## MONEY.

**£.** stands for Pounds; *s.* for Shillings; *d.* for Pence; ¼*d.* for a Farthing; ½*d.* for a Halfpenny; ¾ for three Farthings.

| | | | | | |
|---|---|---|---|---|---|
| 2 Farthings | make | 1 Halfpenny | 30 Pence | make | 1 Half-crown |
| 4 Farthings | — | 1 Penny | 5 Shillings | — | 1 Crown |
| 4 Pence | — | 1 Groat | 4 Shillings and 6*d.* | | 1 Dollar |
| 6 Pence | — | 1 Tester | 20 Shillings | — | 1 Pound |
| 12 Pence | — | 1 Shilling | 21 Shillings | — | 1 Guinea |

## PENCE TABLE.

| | | | | | |
|---|---|---|---|---|---|
| 12 Pence | make | 1 Shilling | 84 Pence | make | 7 Shillings |
| 20 Pence | — | 1 and 8 pence | 90 Pence | — | 7 and 6 pence |
| 24 Pence | — | 2 Shillings | 96 Pence | — | 8 Shillings |
| 30 Pence | — | 2 and 6 pence | 100 Pence | — | 8 and 4 pence |
| 36 Pence | — | 3 Shillings | 108 Pence | — | 9 Shillings |
| 40 Pence | — | 3 and 4 pence | 110 Pence | — | 9 and 2 pence |
| 48 Pence | — | 4 Shillings | 120 Pence | — | 10 Shillings |
| 50 Pence | — | 4 and 2 pence | 130 Pence | — | 10 and 10 pence |
| 60 Pence | — | 5 Shillings | 132 Pence | — | 11 Shillings |
| 70 Pence | — | 5 and 10 pence | 140 Pence | — | 11 and 8 pence |
| 72 Pence | — | 6 Shillings | 144 Pence | - | 12 Shillings |
| 80 Pence | — | 6 and 8 pence | 150 Pence | — | 12 and 6 pence |

---

## WEIGHTS.

### AVOIRDUPOIS WEIGHT.

Used in buying and selling Flour, Bread, Butter, Sugar, Candles, Pitch, Tar, Wax, Iron, Lead, and almost every thing else.

| | | | |
|---|---|---|---|
| 16 Drams *(dr.)* | make | 1 Ounce | *oz.* |
| 16 Ounces | | 1 Pound | *lb.* |
| 14 Pounds | | 1 Stone | *st.* |
| 28 Pounds | | 1 Quarter Hundred-weight | *qr.* |
| 4 Quarters or 112 Pounds | | 1 Hundred-weight | *cwt.* |
| 20 Hundred-weight | | 1 Ton | *T.* |

### TROY WEIGHT.

For weighing Gold, Silver, and Jewels.

| | | | |
|---|---|---|---|
| 24 Grains *(gr.)* | make | 1 Pennyweight | *dwt.* |
| 20 Pennyweights | | 1 Ounce | *oz.* |
| 12 Ounces | | 1 Pound | *lb.* |

## APOTHECARIES' WEIGHT.

For weighing out Drugs and all kinds of Medicines.

| | | | | |
|---|---|---|---|---|
| 20 | Grains (*gr.*) ......make | 1 | Scruple .................. | *scr.* |
| 3 | Scruples.................. | 1 | Dram ..................... | *dr.* |
| 8 | Drams .................. | 1 | Ounce .................. | *oz.* |
| 12 | Ounces .................. | 1 | Pound..................... | *lb.* |

## MEASURES.

### LONG MEASURE.

| | | | | |
|---|---|---|---|---|
| 12 | Lines, or 3 Barley-corns make | 1 | Inch ............ | *in.* |
| 4 | Inches............................ | 1 | Hand ......... | *hd.* |
| 12 | Inches............................ | 1 | Foot ............ | *ft.* |
| 3 | Feet, or 36 Inches ............ | 1 | Yard ............ | *yd.* |
| 5½ | Yards ............................ | 1 | Rod, Pole, or Perch | *p.* |
| 4 | Poles, or 22 Yards ............ | 1 | Chain ......... | *ch.* |
| 10 | Chains ............................ | 1 | Furlong......... | *fur.* |
| 8 | Furlongs, or 1760 Yards...... | 1 | Mile ............ | *mi.* |
| 3 | Miles ............................ | 1 | League ......... | *lea.* |

### CLOTH MEASURE.

| | | | | |
|---|---|---|---|---|
| 2¼ | Inches .........make | 1 | Nail ............ | *n.* |
| 4 | Nails, or 9 Inches | 1 | Quarter of a Yard | *qr.* |
| 4 | Quarters, or 16 Nails | 1 | Yard ............ | *yd.* |
| 3 | Quarters ............ | 1 | Flemish Ell ... | *Fl. E.* |
| 5 | Quarters ............ | 1 | English Ell ... | *E. E.* |
| 6 | Quarters ............ | 1 | French Ell ... | *Fr. E.* |

### SQUARE MEASURE.

Used by Carpenters, Plasterers, Painters, Slaters, Whitewashers, and others, for measuring surfaces.

| | | | | |
|---|---|---|---|---|
| 144 | Square Inches make | | 1 | Square Foot |
| 9 | Square Feet | — | 1 | Square Yard |
| 100 | Square Feet | — | 1 | Square of Flooring |
| 272¼ | Square Feet, or | — | 1 | Square Perch; also |
| 30¼ | Square Yards | — | 1 | Rod of Walling. |

### LAND MEASURE.

| | | | |
|---|---|---|---|
| 7 | Inches and 92 hundredth parts of an Inch ........... make | 1 | Link |
| 25 | Links, or 5½ Yards . — | 1 | Pole or Perch |
| 100 | Links . . . . — | 1 | Chain |
| 40 | Square Perches . — | 1 | Rood |
| 4 | Roods, or 10 Square Chains — | 1 | Acre |
| 640 | Acres . . . . — | 1 | Square Mile |

## CUBIC OR SOLID MEASURE.

For measuring the bulk or quantity of any thing solid, as Timber, Stone, Earth, Hay, &c.

| | | | |
|---|---|---|---|
| 1728 | Cubic Inches . . | make | 1 Cubic Foot. |
| 27 | — Feet . . | — | 1 Cubic Yard. |
| 40 | — Feet of Round or Rough Timber . | — | 1 Ton or Load. |
| 50 | — Feet of Hewn Timber | — | 1 Ton or Load. |
| 277¼ | — Inches . . | — | 1 Gallon (Standard Imperial.) |
| $2218\frac{1}{5}$ | — Inches . . | — | 1 Bushel (do.) |

## WINE MEASURE.

Used in measuring Wine and Spirits, Cider, Vinegar, and other Liquids.

| | | | | | |
|---|---|---|---|---|---|
| 4 | Gills | make | 1 | Pint ... | *pt.* |
| 2 | Pints | —— | 1 | Quart ... | *qrt.* |
| 4 | Quarts | —— | 1 | Gallon ... | *gall.* |
| 10 | Gallons | —— | 1 | Anker of Brandy | *an.* |
| 18 | Gallons | —— | 1 | Rundlet ... | *rundt.* |
| 31½ | Gallons | —— | 1 | Barrel ... | *barr.* |
| 42 | Gallons | —— | 1 | Tierce ... | *tier.* |
| 63 | Gallons | —— | 1 | Hogshead ... | *hhd.* |
| 84 | Gallons | —— | 1 | Puncheon ... | *pun.* |
| 126 | Gallons | —— | 1 | Pipe or Butt | *pipe or butt* |
| 2 | Pipes | —— | 1 | Tun | *tun.* |

## BEER MEASURE.

| | | |
|---|---|---|
| 2 Pints | make | 1 Quart |
| 4 Quarts | — | 1 Gallon |
| 9 Gallons | — | 1 Firkin |
| 2 Firkins | — | 1 Kilderkin |
| 2 Kilderkins | make | 1 Barrel |
| 3 Kilderkins | — | 1 Hogshead |
| 2 Hogsheads | — | 1 Butt |

## DRY MEASURE.

For measuring Corn, Potatoes, Salt, Coals, and other dry goods.

| | | |
|---|---|---|
| 2 Pints | make | 1 Quart |
| 4 Quarts | ... | 1 Gallon |
| 2 Gallons | ... | 1 Peck |
| 4 Pecks | ... | 1 Bushel |
| 4 Bushels | ... | 1 Coomb |
| 8 Bushels | make | 1 Quarter of a Chaldron |
| 4 Quarters | ... | 1 Chaldron |
| 5 Quarters | ... | 1 Wey |
| 2 Weys | ... | 1 Last |

## TIME.

| | | | | |
|---|---|---|---|---|
| 60 | Seconds .............. | make | 1 | Minute |
| 60 | Minutes .............. | —— | 1 | Hour |
| 24 | Hours ................ | —— | 1 | Day |
| 12 | Hours ................ | —— | 1 | Working-day |
| 7 | Days ................. | —— | 1 | Week |
| 4 | Weeks .......... | —— | 1 | Lunar Month |
| 52 | Weeks and 1 day, | —— | 1 | Year. |
| 13 | LunarMonths&1 day | | | |
| 12 | Calendar Months, or | | | |
| 365 | Days and 6 hours | | | |

The Calendar Months have not all the same number of days, as you may see by these lines:

Thirty days hath September,  
April, June, and November;  
February hath twenty-eight alone,  
And all the rest have thirty-one,  
But when 'tis Leap year, we assign,  
To February, twenty-nine.

## MISCELLANEOUS TABLE.

| | | | | |
|---|---|---|---|---|
| 12 | Units | make | 1 | Dozen |
| 12 | Dozen | —— | 1 | Gross |
| 12 | Gross, or 144 Dozen | —— | 1 | Great Gross |
| 20 | Units | —— | 1 | Score |
| 5 | Score | —— | 1 | Hundred |
| 6 | Score | —— | 1 | Great Hundred |
| 28 | Pounds of Wool | —— | 1 | Tod |
| 240 | Pounds of Wool | —— | 1 | Pack |
| 36 | Pounds of Straw | —— | 1 | Truss |
| 60 | Pounds of New Hay | —— | 1 | Truss. |
| or 56 | Pounds of Old Hay | | | |
| 36 | Trusses | —— | 1 | Load |
| 56 | Pounds of Butter | —— | 1 | Firkin |
| 64 | Pounds of Soap | | | |
| 4 | Firkins | —— | 1 | Barrel |
| 112 | Pounds of Raisins | —— | 1 | Barrel |
| 7½ | Pounds of Oil | —— | 1 | Gallon |
| 24 | Sheets of Paper | —— | 1 | Quire |
| 20 | Quires of Paper | —— | 1 | Ream |
| 2 | Reams | —— | 1 | Bundle |

# COMPOUND ADDITION.

In many parts of England there are Savings Banks, that is Banks, in which working people can safely lay up the money which they have no occasion to spend. Suppose an industrious man were to take to the Savings' Bank at different times, 5 pounds 10 shillings; 3 pounds 12 shillings and 6 pence; 4 pounds 14 shillings and 9 pence; and 7 pounds 6 shillings and 8 pence; he might wish to know at last how much money he had in the Bank. Could you tell him? Perhaps you would try to find out by adding the money together in this manner.

| | pounds. | shillings. | pence. |
|---|---|---|---|
| | 5 | 10 | 0 |
| | 3 | 12 | 6 |
| | 4 | 14 | 9 |
| | 7 | 6 | 8 |
| Total | £.19 | 42 | 23 |

But to say he had 19 pounds, 42 shillings, and 23 pence, would be a clumsy way of expressing one's self. Let us try if we cannot do rather better. Put down £. for pounds, *s.* for shillings, and *d.* for pence

| | £. | *s.* | *d.* |
|---|---|---|---|
| | 5 | 10 | 0 |
| | 3 | 12 | 6 |
| | 4 | 14 | 9 |
| | 7 | 6 | 8 |
| Total | £.21 | 3 | 11 |

Begin with the column of pence. It comes to 23 You know from the Pence Table, or you can find out by Division, that 23 pence are 1s. and 11d. You put down 11d. and carry 1 to the shillings.

The shillings come to 43. 43 shillings are £.2 and 3s.: put down 3s. and carry 2 to the pounds.

The pounds come to 21: put down £21. The man has altogether £.21 3s. and 11d.

This is called Compound Addition. It is a rule which is useful in many ways, as well as in adding together sums of money.

Grocers and other tradesmen buy their goods in large quantities, and sell them by small quantities at a time, to persons in the neighbourhood. If a grocer at one time buys 6 hundred-weight of sugar; at another, 10 hundred-weight 3 quarters: another time 2 hundred-weight 1 quarter 16 pounds, and at last 13 hundred-weight and 19 pounds, the whole quantity may be found in this way. Put cwt. for hundred-weights, qrs. for quarters, and lbs. for pounds, and set down the several quantities of sugar under each other, that you may add them together.

| cwt. | qrs. | lbs. |
|---|---|---|
| 6 | 0 | 0 |
| 10 | 3 | 0 |
| 2 | 1 | 16 |
| 13 | 0 | 19 |
| 32 | 1 | 7 |

There are 35 lbs. 35 lbs. are 1qr. and 7 lbs.: put down 7 lbs. and carry 1 qr.

There are 5qrs. 5qrs. are 1cwt. and 1qr.: put down 1qr. and carry 1cwt.

There are 32cwts.: put down 32cwts.

1 Add one shilling, two and six-pence, and four and two-pence together.

2 Add three shillings and six-pence, four and six-pence, and nine-pence together.

3 Add five and four-pence, four and four-pence, and eleven shillings together.

4 Add six and six-pence, seven and three-pence, and nine-pence together.

5 Add eight and four-pence, nine and six-pence, and six-pence together.

6 Add 3s. 3d., 6s. 9d., and 4d. together.

7 If I went to collect money for a distressed family, and one person gave me 9d.; another 1s. 6d.; another 3s.; another 3d.; another 2s. 6d.; and another 11d.;—how much should I have to give to the poor people?

Work the following sums.

8 5s. 4d. + 9s. 4d. + 2s. 4d.

9 2s. 6¾d. + 6s. 6¼d. + 11s.

10 4s. 4½d. + 1s. 4½d. + 9s. 2d.

11 1s. 6¾d. + 2s. 9¼d. + 4¼d.

12 4s. 7½d. + 8s. 4¾d.

13 How much money must I take with me if I wish to pay the butcher £1 3s., the baker 5s. 6d., the cheesemonger twenty-pence, the green-grocer half a crown, and the brewer ten and six-pence.

14 Suppose a farmer's wife had been to market, and sold a couple of ducks for 2s. 6d.; 35 eggs for 30d.; some butter for 33d.; and some honey for 2s.—how much money would she get in all?

15 What will be the worth of a girl's frock, if the print cost 4s.; the lining 7d.; the tape and thread 2¼d.; and if she gave 9d. for getting it made?

|  | s. | d. |
|---|---|---|
| 16 | 3 | 9 |
|  | 7 | 6 |
|  | 1 | 5 |
|  | 3 | 10 |
|  | 8 | 7 |
|  | 1 | 1 |

|  | £. | s. | d. |
|---|---|---|---|
| 17 | 15 | 7 | 6 |
|  | 3 | 4 | 5 |
|  | 19 | 6 | 11 |
|  |  | 11 | 6 |
|  |  | 3 | 4 |
|  | 19 | 7 | 9 |
|  |  | 6 | 5½ |
|  | 15 | 3 | 7½ |
|  | 17 | 9 | 3 |

18 Give the sum of three sovereigns; eighteen crowns; nine half crowns; seven shillings; and eleven sixpences.

19 If I have three purses; in the first purse, 1 shilling, one half crown, and three halfpence; in the next purse, one sovereign, one crown, and five sixpences; in the third purse, nine half crowns; how much money should I have in all?

20 Suppose a working man pays 11d. a week for butter; 13d. for beer; 3s. for butchers' meat; 9d. for tea; 8d. for sugar; 5s. for meal or bread; and 7d. for milk, how much will these articles cost him in the week?

21 Add 20 farthings; 20 pence; and 20 shillings.

22 Add 100 farthings; 100 pence; 100 shillings; and 100 pounds together.

23 Find the amount of the following sums, eighty pence, tweuty four farthings; ninety-pence, seven sixpences, eight and three-pence, eleven-pence farthing, twenty shillings, and thirty shillings.

24

| £. | s. | D. |
|---|---|---|
| 14 | 1 | 11 |
| 3 | 17 | 6 |
| 15 | 15 | 3 |
| 32 | 1 | 1¼ |
| 14 | 3 | 7 |
|  | 7 | 8 |
|  | 4 | 6 |
|  | 7 | 7¾ |
|  |  | 3 |
|  | 9 | 6½ |

25

| £. | s. | D. |
|---|---|---|
|  | 19 | 11¾ |
|  | 7 | 9½ |
| 37 | 14 | 3¼ |
|  | 7 | 6 |
| 8 | 1 | 4 |
| 22 | 2 | 2½ |
| 7 | 15 | 10 |
|  | 3 | 5 |
|  | 17 | 7 |
|  | 15 | 5 |

26

| £. | s. | D. |
|---|---|---|
|  | 3 | 2 |
|  | 2 | 7 |
|  | 19 | 11½ |
|  | 15 | 3¾ |
| 78 | 4 | 4½ |
| 9 | 13 | 7 |

27

| £. | s. | D. |
|---|---|---|
| 14 | 7 | 8 |
| 37 | 0 | 0¼ |
| 15 | 0 | 0 |
| 16 | 16 | 6 |
| 13 | 17 | 7¾ |
| 100 | 10 | 10 |

28

| £. | s. | D. |
|---|---|---|
| 15 | 19 | 8½ |
| 17 | 17 | 9¼ |
| 48 | 13 | 6 |
| 53 | 11 | 7½ |
| 95 | 15 | 5¼ |
| 86 | 6 | 3 |

29

| £. | s. | D. |
|---|---|---|
| 98 | 7 | 9¾ |
| 24 | 11 | 6½ |
| 36 | 3 | 3¾ |
| 44 | 14 | 2½ |
| 57 | 15 | 4¼ |
| 19 | 19 | 0¼ |

30

| £. | s. | D. |
|---|---|---|
| 1 | 17 | 9 |
| 18 | 11 | 11½ |
| 29 | 13 | 3 |
| 33 | 12 | 10¾ |
| 44 | 15 | 11 |
| 57 | 16 | 6¾ |

31

| £. | s. | D. |
|---|---|---|
| 1 | 1 | 1¼ |
| 39 | 14 | 6¾ |
| 65 | 19 | 7¼ |
| 27 | 11 | 3 |
| 99 | 10 | 10 |
| 65 | 0 | 9 |

32

| £. | s. | D. |
|---|---|---|
| 179 | 17 | 7¼ |
| 324 | 19 | 9½ |
| 567 | 10 | 3¾ |
| 841 | 11 | 2 |
| 934 | 15 | 10¼ |
| 126 | 16 | 11 |

33

| £. | s. | D |
|---|---|---|
| 719 | 9 | 4 |
| 342 | 2 | 7 |
| 999 | 13 | 10¾ |
| 345 | 15 | 11 |
| 616 | 16 | 9 |
| 792 | 6 | 10½ |

34

| £. | s. | D. |
|---|---|---|
| 180 | 7 | 6 |
| 453 | 17 | 11 |
| 18 | 19 | 9 |
| 719 | 11 | 8 |
| 865 | 3 | 11 |
| 432 | 5 | 10 |

35

| £. | s. | D. |
|---|---|---|
| 446 | 17 | 9¾ |
| 792 | 11 | 8¼ |
| 346 | 8 | 7½ |
| 789 | 4 | 6¼ |
| 324 | 15 | 5½ |
| 19 | 6 | 7¾ |

36

| £. | s. | D. |
|---|---|---|
| 567 | 17 | 9½ |
| 731 | 19 | 6½ |
| 824 | 7 | 4 |
| 925 | 18 | 3 |
| 636 | 16 | 11¾ |
| 1444 | 14 | 4¼ |

37

| £. | s. | D. |
|---|---|---|
| 965 | 10 | 10 |
| 471 | 0 | 11¼ |
| 825 | 4 | 11¼ |
| 462 | 5 | 9½ |
| 345 | 11 | 10¾ |
| 786 | 6 | 11¼ |

38

| £. | s. | D. |
|---|---|---|
| 4197 | 15 | 7½ |
| 3274 | 17 | 8¼ |
| 5651 | 14 | 9 |
| 7100 | 15 | 6 |
| 7217 | 19 | 10 |
| 6485 | 16 | 11¼ |

39

| £. | s. | D. |
|---|---|---|
| 397 | 11 | 4½ |
| 14 | 7 | 8 |
| 9 | 6 | 4 |
| 3000 | 0 | 10 |
| 425 | 14 | 11 |
| 6 | 0 | 7¼ |

40 Find the sum of nine pounds, thirteen shillings and four pence half-penny; nineteen shillings and eleven pence three farthings; seven pounds and one penny; eighteen pounds, seventeen shillings; four pounds and one farthing; and nineteen pounds, nineteen shillings, and eleven pence three farthings.

41 What is the value of seven firkins of butter, the price of each firkin being twenty-three shillings and sixpence?

42 If a servant went to market, and paid half a crown for beef, eighteen pence and a halfpenny for potatoes, four shillings and seven pence for coffee, seven shillings and sixpence for tea, twenty-nine pence and a halfpenny for butter, two pence three farthings for herbs, and three groats and a half for cheese ; how much money must she have to pay for all ?

43 If I owe one person one pound eleven shillings and fourpence farthing; another two pounds thirteen and fourpence; another thirty-nine pounds fifteen shillings and seven pence halfpenny; another seventeen pounds seventeen shillings and seven pence three farthings ; and another fourteen guineas : how much do I owe altogether ?

| | £. | S. | D. | | £. | S. | D. |
|---|---|---|---|---|---|---|---|
| 44 | 326 | 18 | 5¾ | 45 | 9 | 9 | 9 |
| | 5019 | 11 | 7 | | 39 | 19 | 11¾ |
| | 127 | 9 | 3½ | | 426 | 17 | 6½ |
| | 34 | 19 | 4¼ | | 516 | 18 | 5¼ |
| | 567 | 3 | 6 | | 1056 | 14 | 9 |
| | 892 | 13 | 11½ | | 11 | 11 | 11¼ |

| | £. | S. | D. | | £. | S. | D. |
|---|---|---|---|---|---|---|---|
| 46 | 456 | 17 | 2 | 47 | 10000 | 0 | 0 |
| | 291 | 12 | 7 | | 678 | 13 | 4¾ |
| | 61 | 3 | 1 | | 8321 | 4 | 5¼ |
| | 11 | 4 | 5 | | 576 | 12 | 9 |
| | 715 | 9 | 6 | | 847 | 16 | 11½ |
| | 921 | 7 | 7 | | 95 | 7 | 2¼ |
| | 15659 | 1 | 8 | | 27 | 14 | 3¾ |

| | £. | s. | d, |
|---|---|---|---|
| 48 | 4719 | 7 | 9 |
| | 5623 | 18 | 6 |
| | 49 | 15 | 5 |
| | 246 | 16 | 11 |
| | 1728 | 17 | 10 |
| | 4170 | 18 | 11 |
| | 64 | 9 | 8 |
| | 5290 | 0 | 9 |
| | 11294 | 10 | 7 |
| | 56 | 15 | 5 |

| | £. | s. | d. |
|---|---|---|---|
| 49 | 5764 | 17 | 3½ |
| | 92 | 2 | 7¼ |
| | 724 | 12 | 9 |
| | 8125 | 2 | 6¼ |
| | 1825 | 11 | 5 |
| | 97 | 17 | 11 |
| | 476 | 19 | 9½ |
| | 821 | 14 | 4¾ |
| | 4256 | 2 | 7 |
| | 1 | 1 | 3¼ |

50 A gentleman, at the end of the year, found that he had paid bills, &c. as follows: butcher's, baker's, chandler's, milkman's, bills, and sundries, 232*l.* 14*s.* 5¾*d*; wine merchant's, 26*l.* 8*s.* 4*d.*; tallow-chandler's, 13*l.* 5*s.* 8*d.*: grocer's, 27*l.* 7*s.* 6*d.*; coal-merchant's, 28*l.* 7*s.* 4*d*·; brewer's, 10*l.* 16*s.* 11*d*; servants' wages, 33*l.* 0*s.* 6*d.*; apothecary and druggist, 23*l.* 17*s.* 5*d.*; rent and taxes, 158*l.* 1*s.* 9*d.*; gardener's wages, and garden seeds, &c. 36*l.* 16*s.* 1*d.*: what was the total amount of his household expenses for that year ?

51 If I had put into a box a guinea, two crowns three half-crowns, one half-sovereign, five sixpences, two shillings, and a sovereign, how much would there be in all ?

52 If I lent a friend some money, and he has paid me back thirteen pounds eighteen shillings and seven pence farthing, and still owes me thirty-six pounds one shilling and four pence three farthings, how much did I lend him ?

| | £. | s. | d. |
|---|---|---|---|
| 53 | 1946 | 17 | 3½ |
| | 22 | 19 | 4¼ |
| | 4534 | 14 | 2 |
| | 623 | 10 | 4¾ |
| | 4315 | 11 | 5 |
| | 24 | 2 | 9½ |
| | 5201 | 13 | 11¼ |
| | 95 | 15 | 1¼ |
| | 4634 | 6 | 10¼ |

| | £. | s. | d. |
|---|---|---|---|
| 54 | 4927 | 17 | 10¼ |
| | 1618 | 15 | 11½ |
| | 17 | 19 | 11¾ |
| | 5392 | 18 | 11¾ |
| | 164 | 13 | 10½ |
| | 7352 | 19 | 11¼ |
| | 100 | 14 | 11½ |
| | 5293 | 10 | 10¼ |
| | 65 | 11 | 10¾ |

| | £. | s. | d. |
|---|---|---|---|
| 55 | 29 | 17 | 4¼ |
| | 132 | 1 | 2 |
| | 8494 | 8 | 3½ |
| | 76 | 12 | 4¾ |
| | 708 | 13 | 7½ |
| | 4000 | 16 | 9 |
| | 165 | 19 | 2 |
| | 5423 | 5 | 10 |
| | 75 | 0 | 11¾ |
| | 10101 | 10 | 10¼ |

| | £. | s. | d. |
|---|---|---|---|
| 56 | 172 | 17 | 6¾ |
| | 4501 | 8 | 7 |
| | 1116 | 15 | 3 |
| | 3279 | 3 | 2¾ |
| | 16 | 13 | 11 |
| | 5427 | 17 | 10¾ |
| | 372 | 8 | 7½ |
| | 14 | 2 | 5½ |
| | 229 | 12 | 6½ |
| | 5 | 15 | 5¼ |

| | | | |
|---|---|---|---|
| 57 | 3791 | 14 | 11¼ |
| | 5243 | 13 | 9¼ |
| | 212 | 18 | 5½ |
| | 5 | 9 | 0 |
| | 6067 | 6 | 4¾ |
| | 3429 | 0 | 0 |
| | 6272 | 17 | 2¾ |
| | 24345 | 0 | 7¼ |
| | 65222 | 0 | 11½ |
| | 13133 | 13 | 10 |

| | | | |
|---|---|---|---|
| 58 | 77 | 17 | 11 |
| | 4216 | 19 | 9½ |
| | 23 | 13 | 6¼ |
| | 4161 | 12 | 10 |
| | 185 | 16 | 4½ |
| | 8764 | 14 | 5½ |
| | 371 | 18 | 10 |
| | 3290 | 14 | 6½ |
| | 4000 | 11 | 10 |
| | 45 | 10 | 11 |

59 On a certain farm there were 27 milch-cows, valued at 284*l.* 9*s.*; five cart-horses, worth 63*l.*; harness for the horses, worth 14*l.*; saddles and bridles, 1*l.*; a waggon and shelvings, 15*l.*; 3 broad-wheeled carts, 10*l.* each; a market-cart, 4*l.* 15s.; 5 ploughs, 6*l.*; six harrows, 5*l.*; a drag, 1*l.* 1s.; a wooden roller, 1*l.* 5s.; waggon-covers and stack-covers, 3*l.*; a scuffler, 1*l.* 9*s.*; a wicking-rake, 1*l.* 5s.; a water cask 1*l*; a water-cart, 4*l.* 10*s.*; four narrow-wheeled carts, 24*l.*; a bean drill, axe, &c. 8*s.*; a winnowing machine, &c. 5*l.* 16*s.*; several stone troughs, 3*l.* 10*s.*; a pump, 3*l.* 7*s.*; a cistern, 7*l.*; and four ladders, 1*l.* each. What was the total value of this farming stock?

60 Find the total of the following sums of money, namely: 765*l.* 4*s.* 11*d.*; 5*s.* 7*d.*; 9*s.*; 47*l.* 6*s.* 11*d.*; 91*l.* 0*s.* 2*d.*; 4*s.*; 6*s.* 2*d.*; 42*l.* 9*s.* 7*d.*; 43*l.* 1*s.*; 14*s.*; and 9*l.*

61 In furnishing a house, the following bills were incurred, of which you are required to reckon the amount: furniture, 466*l.* 15*s.*; hardware, 21*l.* 1*s.* 6*d.*; plate, 27*l.* 10*s.*; ironmongery, 53*l.* 5*s.* 7*d.*; floor-cloth, 13*l.* 12*s.* 10*d.*; carpets, 49*l.* 14*s.* 10*d.*; tin-ware, 16*l.* 5*s.* 6*d.*; glass, 10*l.* 15*s.* 6*d.*; brass goods, &c., 1*l.* 1*s.* 3*d.*; plated goods, 11*l.* 2*s.* 1*d.*; china, 12*l.* 2*s.* 6*d.*; linen, 43*l.* 13*s.*; baskets, mats, brushes, &c., 6*l.* 0*s.* 6*d.*; smith's work, 15*l.* 5*s.*

62 If I have six parcels of sugar, the first weighing eight pounds; the next one quarter of a hundred-weight; the next, half a hundred-weight; the next, eleven pounds and a half; the next, three pounds; and the last, twenty-nine pounds; how much weight of sugar have I in all?

63 If a carrier has four parcels of goods; the first weighing three ounces; the next, eighteen ounces; the next, one pound and a half: and the last, five pounds and a half; what weight will he have to carry?

64 If I have bought, at a druggist's, seven packets of medicines; the first weighing twenty-three grains;

the next, eleven grains; the next, one scruple and a half; the next, three scruples; the next, one drachm; the next three drachms; and the last four scruples; how much would they weigh if I put them into the scales all together?

65 If a grocer's apprentice puts up 45 half-pound parcels of sugar, 20 pound parcels, and 36 four-ounce parcels; how much will there be altogether?

| | ℔. | oz. | dwt. |
|---|---|---|---|
| 66 | 1 | 9 | 19 |
| | 19 | 8 | 7 |
| | 24 | 11 | 16 |
| | 23 | 10 | 14 |
| | 10 | 7 | 15 |
| | 2 | 5 | 11 |

| | ℔. | oz. | dwt. | gr. |
|---|---|---|---|---|
| 67 | 10 | 3 | 15 | 21 |
| | 12 | 2 | 13 | 23 |
| | 15 | 0 | 11 | 20 |
| | 6 | 11 | 9 | 17 |
| | 35 | 5 | 19 | 16 |
| | 92 | 7 | 18 | 13 |

| | ℔. | oz. | dr. | sc. |
|---|---|---|---|---|
| 68 | 16 | 7 | 7 | 1 |
| | 14 | 4 | 4 | 2 |
| | 10 | 8 | 3 | 0 |
| | 11 | 9 | 5 | 0 |
| | 12 | 11 | 6 | 1 |

| | ℔. | oz. | dr. | sc. |
|---|---|---|---|---|
| 69 | 21 | 9 | 7 | 1 |
| | 36 | 8 | 6 | 2 |
| | 14 | 10 | 4 | 0 |
| | 10 | 11 | 3 | 2 |
| | 91 | 0 | 5 | 1 |

| | oz. | dr. | scr. | grs. |
|---|---|---|---|---|
| 70 | 7 | 7 | 2 | 19 |
| | 2 | 3 | 2 | 15 |
| | 5 | 5 | 1 | 13 |
| | 7 | 8 | 0 | 18 |
| | 6 | 4 | 1 | 11 |
| | 4 | 1 | 1 | 9 |

| | cwt. | qr. | lb. |
|---|---|---|---|
| 71 | 46 | 3 | 27¾ |
| | 54 | 2 | 14 |
| | 212 | 1 | 19 |
| | 3 | 0 | 24½ |
| | 196 | 2 | 21 |
| | 27 | 3 | 19 |

| | ton. | cwt. | qr. |
|---|---|---|---|
| 73 | 142 | 19 | 3 |
| | 265 | 6 | 2 |
| | 321 | 11 | 2 |
| | 47 | 13 | 0 |
| | 3 | 17 | 1 |
| | 262 | 7 | 3 |
| | 4 | 6 | 1 |
| | 22 | 0 | 2 |
| | 41 | 4 | 0 |
| | 26 | 14 | 2 |

| | cwt. | qr. | ℔. | oz. |
|---|---|---|---|---|
| 73 | 14 | 2 | 24 | 15 |
| | 24 | 3 | 17 | 13 |
| | 46 | 3 | 20 | 11 |
| | 37 | 2 | 14 | 10 |
| | 95 | 2 | 4 | 9 |
| | 84 | 1 | 7 | 6 |
| | 32 | 0 | 21 | 4 |

74 If a lady wished to cut out eleven frocks which would take the following lengths of stuff; viz., four yards; three yards and a half; nine quarters of a yard; two yards and three quarters; five yards and a nail; three yards and six nails; two yards and thirteen nails; four yards; five yards; four yards and three quarters; and five yards and a quarter; how much stuff must she buy for the purpose?

75 What will nine yards and a half; three yards and a half; and eight yards, three quarters, and a nail, measure altogether?

76 If I had gathered seven baskets full of gooseberries; and the first contained three pints; the next, four quarts; the next eleven pints; the next, a pint and a half; the next, nine pints and a half; the next, three quarts and a half; and the last one gallon; what quantity of gooseberries would there be?

77 If a farmer mixes 12 bushels of rye with 48 bushels of wheat, to sow in his field, how many loads (3 bushels = 1 load) are there in all?

78 Add together, five pecks, five bushels, and one bushel and a half, and give me the quantity in bushels and pecks.

| | cwt. | qr. | lb. |
|---|---|---|---|
| 79 | 143 | 3 | 27 |
| | 261 | 2 | 17 |
| | 16 | 1 | 0 |
| | 832 | 0 | 4 |
| | 135 | 2 | 5 |
| | 16 | 1 | 16 |
| | 44 | 3 | 13 |
| | 313 | 3 | 22 |
| | 7 | 3 | 25 |

| | yd. | qr. | n. |
|---|---|---|---|
| 80 | 14 | 2 | 3 |
| | 17 | 3 | 1 |
| | 35 | 1 | 3½ |
| | 76 | 2 | 2½ |
| | 99 | 3 | 2 |

| | E. E. | qr. | n. |
|---|---|---|---|
| 81 | 13 | 4 | 3¼ |
| | 32 | 3 | 2 |
| | 45 | 4 | 0¾ |
| | 63 | 2 | 1½ |
| | 15 | 2 | 2 |

| | yd. | ft. | in. |
|---|---|---|---|
| 82 | 729 | 1 | 4½ |
| | 64 | 2 | 6¼ |
| | 56 | 2 | 10 |
| | 323 | 1 | 11 |
| | 414 | 2 | 9 |

| | m. | f. | p. |
|---|---|---|---|
| 83 | 181 | 8 | 15 |
| | 240 | 1 | 0 |
| | 659 | 2 | 10 |
| | 101 | 0 | 9 |
| | 2100 | 1 | 1 |

| | lea. | mi. | fur. |
|---|---|---|---|
| 84 | 305 | 1 | 2 |
| | 30 | 0 | 4 |
| | 150 | 2 | 1 |
| | 50 | 0 | 0 |
| | 400 | 0 | 0 |

| | fur. | p. | yd. |
|---|---|---|---|
| 85 | 90 | 11 | 1 |
| | 3 | 9 | 3 |
| | 20 | 2 | 0½ |

| | a. | r. | p. |
|---|---|---|---|
| 86 | 40 | 0 | 19 |
| | 450 | 8 | 5 |
| | 350 | 1 | 5 |

| | gall. | qt. | pt. |
|---|---|---|---|
| 87 | 4 | 3 | 1 |
| | 5 | 2 | 1 |
| | 4 | 0 | 1 |

|  | bar. | gall. | qt. |
|---|---|---|---|
| 88 | 1 | 3 | 3 |
|  |  | 10 | 2 |
|  |  | 20 | 1 |
|  |  | 8 | 0 |
|  |  | 24 | 3 |
|  |  | 2 | 1 |

|  | a. | r. | p. |
|---|---|---|---|
| 89 | 3 | 7 | 6 |
|  | 1 | 6 | 6 |
|  | 1 | 1 | 6 |
|  | 5 | 3 | 6 |
|  |  | 2 | 1 |
|  | 1 | 0 | 1 |

|  | a. | r. | p. |
|---|---|---|---|
| 90 | 436 | 2 | 20 |
|  | 24 | 2 | 14 |
|  | 135 | 0 | 19 |
|  | 416 | 0 | 7 |
|  | 24 | 1 | 28 |
|  | 324 | 3 | 39 |

|  | w. hhd. | gall. | qt. |
|---|---|---|---|
| 91 | 30 | 52 | 1 |
|  | 12 | 62 | 3 |
|  | 32 | 14 | 0 |
|  | 6 | 3 | 2 |
|  | 76 | 29 | 2 |
|  | 94 | 34 | 3 |

|  | tun. | gall. | qt. |
|---|---|---|---|
| 92 | 47 | 80 | 3 |
|  | 23 | 32 | 2 |
|  | 1 | 14 | 2 |
|  | 56 | 27 | 3 |
|  | 72 | 58 | 1 |

|  | tun. | hhd. | gall. | qt. |
|---|---|---|---|---|
| 93 | 16 | 3 | 60 | 3 |
|  | 37 | 2 | 50 | 2 |
|  | 45 | 2 | 40 | 1 |
|  | 9 | 1 | 33 | 1 |
|  | 36 | 0 | 27 | 0 |

|  | bar. | fir. | gall. |
|---|---|---|---|
| 94 | 20 | 3 | 8 |
|  | 32 | 2 | 6 |
|  | 17 | 1 | 5 |
|  | 34 | 3 | 4 |
|  | 57 | 2 | 8 |
|  | 100 | 2 | 7 |

|  | hhd. | gall. | qt. | pt. |
|---|---|---|---|---|
| 95 |  | 51 | 3 | 1 |
|  | 25 | 44 | 2 | 1 |
|  | 66 | 32 | 1 | 0 |
|  | 24 | 19 | 0 | 1 |
|  | 32 | 17 | 2 | 1 |
|  | 72 | 23 | 2 | 1 |

| | qtr. | bush. | peck. |
|---|---|---|---|
| 96 | 47 | 7 | 3 |
| | 19 | 6 | 2 |
| | 93 | 5 | 2 |
| | 24 | 2 | 3 |
| | 57 | 4 | 1 |

| | chal. | bush. | peck. |
|---|---|---|---|
| 97 | 79 | 30 | 3 |
| | 110 | 24 | 2 |
| | 245 | 17 | 2 |
| | 550 | 19 | 3 |
| | 67 | 29 | 3 |

| | bush. | peck. | gall. |
|---|---|---|---|
| 98 | 15 | 3 | 1 |
| | 17 | 2 | 1 |
| | 90 | 2 | 1 |
| | 41 | 3 | 1 |
| | 32 | 0 | 0 |
| | 14 | 1 | 1 |

| | hrs. | min. | sec. |
|---|---|---|---|
| 99 | 24 | 59 | 49 |
| | 95 | 42 | 55 |
| | 106 | 30 | 38 |
| | 37 | 15 | 27 |
| | 24 | 20 | 32 |
| | 212 | 33 | 42 |

100 If a person travelling staid at one place three days, twelve hours and a half; at another, one hour and thirty minutes; at another, thirteen hours, forty five minutes; and at another, seven days, three hours, fifty seven minutes, How long was he in these places altogether?

101 How much play will a boy have who plays three hours forty minutes in one day; four hours and a quarter another day; two hours sixteen minutes another; and five hours and a half another?

102 Suppose a man walks thirteen miles, five furlongs one day; nine miles, five furlongs three perches, and a half another; sixteen miles and a half another; and eighteen miles, two furlongs, thirty-nine perches every day for three days more: How far will he walk altogether?

| | wks. | days. | hrs. |
|---|---|---|---|
| 103 | 14 | 6 | 23 |
| | 92 | 5 | 20 |
| | 14 | 3 | 19 |
| | 46 | 5 | 17 |
| | 73 | 2 | 13 |
| | 185 | 6 | 7 |

| | yrs. | mo. | wks. | days. |
|---|---|---|---|---|
| 104 | 47 | 12 | 3 | 6 |
| | 22 | 10 | 3 | 3 |
| | 43 | 9 | 2 | 4 |
| | 27 | 8 | 3 | 2 |
| | 16 | 6 | 1 | 1 |
| | 43 | 4 | 2 | 5 |

| | days. | hrs. | min. |
|---|---|---|---|
| 105 | 143 | 23 | 43 |
| | 27 | 14 | 27 |
| | 43 | 11 | 59 |
| | 379 | 3 | 48 |
| | 420 | 0 | 0 |

| | yrs. | mo. | wks. |
|---|---|---|---|
| 106 | 50 | 12 | 3 |
| | 17 | 9 | 2 |
| | 969 | 11 | 1 |
| | 13 | 6 | 0 |
| | 77 | 7 | 3 |

| | fur. | p. | yds. |
|---|---|---|---|
| 107 | 17 | 1 | 3 |
| | 16 | 19 | 0 |
| | 18 | 29 | 3 |
| | 74 | 17 | 0 |
| | 13 | 3 | 4 |
| | 12 | 38 | 6 |

| | fur. | p. | yds. |
|---|---|---|---|
| 108 | 180 | 17 | 0 |
| | 19 | 10 | 4 |
| | 46 | 10 | 3 |
| | 81 | 10 | 2 |
| | 71 | 4 | 1 |
| | 19 | 23 | 3 |

| | fur. | p. | yds. |
|---|---|---|---|
| 109 | 19 | 8 | 4 |
| | 17 | 18 | 3 |
| | 21 | 20 | 2 |
| | 36 | 4 | 0 |
| | 17 | 17 | 4½ |

| | chains. | p. | yds. |
|---|---|---|---|
| 110 | 16 | 3 | 4 |
| | 18 | 2 | 3½ |
| | 19 | 3 | 2 |
| | 33 | 1 | 1½ |
| | 40 | 2 | 4¼ |

111 Reckon the quantity of milk in five pans, if th first hold three gallons; the second, five quarts; th third, fifteen pints; the fourth, eleven quarts; an the fifth, one gallon and a half.

112 If I have one cask of beer containing eightee gallons; another holding three firkins; anothe eleven gallons; another nine gallons; and anoth containing a barrel; how much have I in all?

113 How much time shall I have spent over a certain piece of work, if I work at it for six hours and thirty minutes one day; for fourteen hours and twenty minutes the next day; and for nine hours and fifty minutes the last day?

114 I want to know how many years a child has lived, who was nursed by its mother from its birth till it was twenty months old; then went to its grandmother for three years and eleven months; then went to school for four months; then staid two months at home; and after going to school for four months again, had returned, and spent three years and a month at home.

# COMPOUND SUBTRACTION.

At the beginning of Compound Addition, we supposed the industrious man to have 21*l.* 3*s.* 11*d.* in the Savings Bank. He might find it necessary to take some of his money out of the Bank: say he takes 10*l.* 12*s.* 6*d.* How much would he have left? This is to be found out by Compound Subtraction, in the following manner.

| | £. | s. | d. | |
|---|---|---|---|---|
| He had in the Bank | 21 | 3 | 11 | |
| He takes out | 10 | 12 | 6 | |
| He has £. | 10 | 11 | 5 | left in the Bank. |

6 pence from 11 pence, leaves 5 pence: put down 5d.

12 shillings from three shillings I cannot: borrow 20 shillings or £1, and say 12 shillings from 23 shillings leaves 11 shillings: put down 11s. and carry 1 to the pounds.

1 pound and 10 pounds are 11 pounds: 11 pounds from 21 pounds, leaves 10 pounds: put down £10. and the answer is £.10 11s. 5d.

A draper buys a piece of cloth, containing 45½ yards. How much is left, when he has sold 13 yards 3 quarters and 1 nail?

| | yds. | qr. | nl. |
|---|---|---|---|
| He buys 45½ yards which equals | 45 | 2 | 0 |
| He sells | 13 | 3 | 1 |
| There is | 31 | 2 | 3 left. |

This sum is worked much in the same manner as the Subtraction of money; except that you borrow from quarters and yards, instead of shillings and pounds. Compound Subtraction is used in all kinds of Weights and Measures.

1 From 4½d. take 3¾d.—how much remains?
2 Take 7d. from 1s. 6d.
3 Take 11½d. from 5s.
4 Take 18s. from £2.
5 Take 18d. from 2s.
6 Take 11d. from 2s. 6d.
7 Take 20d. from 6s.
8 Take 9¾d. from 1s.
9 Take 1¾d. from 3d.
10 Take 30s. from £5.
11 Take 80s. from £.4 10s.
12 Take 5s. 4d. from 9s.
13 Take £1 10s. 6d. from £3.
14 £2 and 9d. from £4.
15 From fifteen guineas take £11 10s.
16 From twelve pounds take 9s. 6d.
17 From £3 5 0, take £2 10 0.
18 Take 7s. ¾d. from 10s.
19 Take £9 9s. 4d. from £18 18s. 8d.
20 From 20 guineas take 20 pounds.
21 Subtract three-pence from one shilling and four-pence.
22 How much is one shilling and two-pence less than two shillings and seven-pence?
23 Take eight-pence from one shilling and five-pence.
24 Take four-pence halfpenny from eleven-pence.
25 How much is six-pence halfpenny less than one shilling and one penny?
26 If Charles buys a sevenpenny whip, and gives a shilling to pay for it; how much must he have back?

| | £. | s. | d. |
|---|---|---|---|
| 27 | 79 | 15 | 7 |
| | 18 | 9 | 10½ |

| | £. | s. | d. |
|---|---|---|---|
| 28 | 47 | 11 | 10 |
| | 19 | 9 | 11 |

| | £. | s. | d. |
|---|---|---|---|
| 29 | 179 | 7 | 10¾ |
| | 83 | 9 | 10½ |

| | £. | s. | d. |
|---|---|---|---|
| 30 | 197 | 17 | 3 |
| | 111 | 4 | 9¼ |

| | £. | s. | d. |
|---|---|---|---|
| 31 | 416 | 13 | 4 |
| | 213 | 7 | 11 |

| | £. | s. | d. |
|---|---|---|---|
| 32 | 67 | 14 | 3 |
| | 17 | 19 | 9¼ |

| | £ | s. | d. |
|---|---|---|---|
| 33 | 930 | 4 | 11½ |
| | 717 | 17 | 7 |

| | £. | s. | d. |
|---|---|---|---|
| 34 | 1111 | 11 | 11¼ |
| | 920 | 7 | 4½ |

| | £. | s. | d. |
|---|---|---|---|
| 35 | 672 | 14 | 7½ |
| | 313 | 13 | 10 |

| | £. | s. | d. |
|---|---|---|---|
| 36 | 416 | 3 | 4½ |
| | 341 | 18 | 1¾ |

| | £. | s. | d. |
|---|---|---|---|
| 37 | 965 | 15 | 5½ |
| | 110 | 16 | 3¼ |

| | £. | s. | d. |
|---|---|---|---|
| 38 | 791 | 13 | 4½ |
| | 462 | 15 | 7¼ |

| | £. | s. | d. |
|---|---|---|---|
| 39 | 516 | 17 | 1¼ |
| | 275 | 3 | 7½ |

| | £. | s. | d. |
|---|---|---|---|
| 40 | 969 | 0 | 0 |
| | 31 | 0 | 11½ |

| | £. | s. | d. |
|---|---|---|---|
| 41 | 849 | 4 | 5½ |
| | 610 | 10 | 8¼ |

| | £. | s. | d. |
|---|---|---|---|
| 42 | 427 | 4 | 3¼ |
| | 392 | 14 | 7½ |

| | £. | s. | d. |
|---|---|---|---|
| 43 | 745 | 5 | 4½ |
| | 196 | 6 | 3¼ |

| | £. | s. | d. |
|---|---|---|---|
| 44 | 4196 | 7 | 4½ |
| | 324 | 11 | 2¾ |

| | £. | s. | d. |
|---|---|---|---|
| 45 | 304 | 19 | 7 |
| | 4 | 19 | 7¼ |

| | £. | s. | d. |
|---|---|---|---|
| 46 | 8961 | 7 | 4¼ |
| | 3279 | 8 | 11½ |

| | £. | s. | d. |
|---|---|---|---|
| 47 | 9432 | 14 | 3¼ |
| | 1678 | 17 | 10½ |

| | £. | s. | d. |
|---|---|---|---|
| 48 | 9999 | 19 | 11¾ |
| | 8714 | 17 | 6½ |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d, |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 1000 | 0 | 0 | 50 | 71821 | 9 | 6½ | 51 | 96783 | 11 | 7 |
| | 0000 | 0 | 0¼ | | 43570 | 12 | 6¾ | | 4994 | 17 | 10½ |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | 810 | 11 | 4¾ | 53 | 7162 | 13 | 4½ | 54 | 8710 | 15 | 6¼ |
| | 374 | 3 | 4 | | 7161 | 13 | 7¼ | | | 15 | 6¾ |

55 Take one shilling and one penny, from two shillings and eight-pence three farthings.

56 From two shillings and eight-pence, take one shilling and one penny farthing.

57 How much will remain if I take nine and eight-pence halfpenny from eighteen shillings?

58 From one pound take eleven shillings.

59 Take three sixpences from a crown.

60 How much will be left if I take nine crowns from nine pounds?

61 Take eleven dollars from nine pounds.

62 If I take a sovereign to the shop to pay a bill of 16 shillings, how much change will they give me.

63 If I take a pound note to the shop to pay two bills, each amounting to six shillings, how much change must I bring back?

64 If I owe my brother nineteen shillings, and he owes me thirty-six shillings and six-pence; how must we settle the account?

65 If I owe a tradesman for three bills, the first eight shillings and eight-pence, the second two shillings and three-pence halfpenny, and the third eleven shillings and four-pence three farthings, and have two pound notes to pay them with, how much shall I have left when I have paid them all?

66 If I take a five pound note to market with me, and spend eleven shillings and three-pence at one stall; nine shillings and eight-pence at another; one pound three shillings at another; six-pence at another; six shillings at another; and four shillings and four-pence at another; how much money must I bring home?

67 If I buy a piece of calico for thirty-one shillings, and pay five shillings for the carriage of it, and sell it for forty shillings, what profit do I get for my trouble?

68 Suppose a person has four hundred and twenty-three pounds thirteen shillings and six-pence, and spends two hundred and sixty-seven pounds fourteen shillings and eleven-pence farthing; how much has he left?

69 Add together five guineas, thirteen sovereigns, and nine half-crowns,; and subtract the sum from one hundred pounds.

70 By how much is a six-pence, a half-crown, a noble, and a half sovereign, less than a guinea?

71 If a gardener has earned three pounds seventeen shillings and eleven-pence halfpenny by working; how much more must he earn to have ten guineas?

72 Suppose a person has one hundred pounds; he pays to one person fourteen pounds five shillings and ten-pence; to another four guineas; and to another three guineas and a half: how much has he left?

73 Subtract half a crown from half a guinea.

74 A boy has one shilling and six-pence pocket-money; but suppose he gives three-pence to a poor beggar; how much will he have left?

75 A poor man had a one pound note, but if he paid sixteen shillings and four-pence out of it, how much will he have then?

76 If I had half a guinea, and spent three shillings and six-pence half-penny; what should I have left?

77 If a gentleman lost his purse, which had thirty guineas in it, and gave fifteen shillings to a person for finding it, how much would he have left?

78 If a cook is offered seven pounds a year wages with tea, or nine pounds without tea, and she accepts the fourteen pounds, and only uses thirty-six shillings worth of tea, how much does she save?

79 Suppose a servant is six and thirty shillings in debt when he goes to a place, where he is to have three pounds a quarter, how much of his quarters' wages will he have when he has paid the debt?

80 Suppose a person has three guineas and a half, fifty-five sovereigns, twenty half-crowns, and one hundred six-pences; how much more money must he have to make one hundred guineas?

81 What would remain in a man's hands at the end of the year, who had cash in hand, at the beginning of it, to the amount of £12, and received £300, and spent £298 15s.?

82 If a person owes his draper eleven pounds seven shillings and nine-pence farthing, his shoe-maker three pounds fourteen shillings and four-pence, his grocer forty-six pounds three shillings and seven-pence half-penny, and his tailor fourteen guineas, and has one hundred pounds to pay these debts, how much will he have to spare?

83 How much must I add to nine hundred and ninety-nine pounds nineteen shillings and eleven-pence three farthings to make £1000?

84 Suppose a shopkeeper buys a piece of stuff for fifty shillings, and sells it for two pounds fifteen shillings, how much does he get by it?

85 If a person at his death owed twenty pounds, and all the goods and money which he left were only worth eighteen pounds eighteen shillings, how much would his creditors lose by him?

86 I received one morning, nine sovereigns, a half sovereign, five shillings and two-pence, and paid a a bill of nine pounds fifteen shillings, how much money had I to bring home with me?

87 Suppose my brother had to pay me thirteen pounds thirteen shillings, but I owe him eight pounds, and wish him to pay a bill for me which comes to one pound thirteen shillings, how much money must I expect to receive from him?

88 If I owe the butcher nine pounds eleven shillings and eight-pence three farthings for meat, and he owes me seventeen shillings for milk and butter, how must we settle the account?

| | oz. | dwt. | gr. |
|---|---|---|---|
| | 1337 | 17 | 4 |
| | 643 | 18 | 23 |

| | oz. | dr. | sc. |
|---|---|---|---|
| 90 | 54 | 7 | 2 |
| | 17 | 6 | 2½ |

| | oz. | dr. | sc. | gr |
|---|---|---|---|---|
| 91 | 47 | 7 | 1 | 14 |
| | 19 | 6 | 2 | 18 |

| | cwt. | qr. | lb. |
|---|---|---|---|
| | 189 | 1 | 21 |
| | 74 | 2 | 24 |

| | ton. | cwt. | qr. | lb. |
|---|---|---|---|---|
| 93 | 1316 | 4 | 2 | 24 |
| | 929 | 17 | 3 | 23 |

| | qr. | lb. | oz. |
|---|---|---|---|
| 94 | 79 | 19 | 13 |
| | 78 | 19 | 15 |

| | cwt. | qr. | lb. | oz. | dr. |
|---|---|---|---|---|---|
| 95 | 147 | 2 | 14 | 3 | 7 |
| | 97 | 3 | 26 | 14 | 11 |

| | yd. | ft. | in. |
|---|---|---|---|
| 96 | 1760 | 2 | 11 |
| | 919 | 2 | 11¼ |

| | miles | fur. | p. | yd. |
|---|---|---|---|---|
| 7 | 300 | 4 | 16 | 0 |
| | 176 | 7 | 39 | 2 |

| | miles | fur. | p. |
|---|---|---|---|
| 98 | 792 | 3 | 2 |
| | 746 | 5 | 28 |

| | lea. | ml. | fur |
|---|---|---|---|
| 99 | 419 | 2 | 1 |
| | 274 | 2 | 4 |

| | yd. | qr. | n. |
|---|---|---|---|
| | 475 | 2 | 3 |
| | 117 | 1 | 2 |

| | E.E. | qr. | n. |
|---|---|---|---|
| 101 | 45 | 3 | 1 |
| | 26 | 4 | 2 |

| | a. | r. | p. |
|---|---|---|---|
| 102 | 419 | 2 | 21 |
| | 178 | 3 | 31 |

| | sq. yds. | ft. | in. |
|---|---|---|---|
| 03 | 4165 | 2 | 78 |
| | 213 | 7 | 132 |

| | w.hhd. | gal. | qt. |
|---|---|---|---|
| 104 | 725 | 14 | 2 |
| | 196 | 47 | 3 |

| | tierces | gal. | qt. |
|---|---|---|---|
| 105 | 250 | 13 | 2 |
| | 72 | 40 | 2 |

| | hhds. | gal. | qt. |
|---|---|---|---|
| 06 | 72 | 28 | 3 |
| | 60 | 50 | 3 |

| | b. bar. | gal. | qt. |
|---|---|---|---|
| 107 | 47 | 20 | 1 |
| | 21 | 30 | 2 |

| | chal. | bush. | p. |
|---|---|---|---|
| 108 | 410 | 30 | 2 |
| | 71 | 31 | 3 |

| | qr. | bush. | p. |
|---|---|---|---|
| 09 | 90 | 4 | 2 |
| | 83 | 7 | 3 |

| | days | hr. | min. |
|---|---|---|---|
| 110 | 432 | 14 | 31 |
| | 193 | 11 | 34 |

| | wks. | days | hr. |
|---|---|---|---|
| 111 | 162 | 3 | 2 |
| | 99 | 5 | 20 |

112 A boy is seven hours in school in one day, and he plays four hours twenty-five minutes; how much longer is he in school than at play?

113 The distance from London to York is one hundred and ninety eight miles: when a person has travelled forty seven miles three furlongs and twenty two perches of the way, how much further has he to go?

114 Suppose a granary caught fire, which had in it five hundred and seventy six quarters, three bushels, two pecks of corn, and only thirty-seven quarters three bushels and a half were not burnt. How much corn was destroyed?

115 Subtract one hundred and seventy-nine hogsheads thirty-two gallons of wine, from nine hundred and sixty-one hogsheads twenty-seven gallons two quarts.

116 Suppose there are two fields, which contain both together eighteen acres, two roods and a half, and one field measures eight acres, one rood, six perches; how much land is there in the other field?

117 If I buy thirty-six cwt. one quarter, twenty pounds of butter; and two tons, one cwt. three quarters of cheese; how much does the cheese weigh more than the butter?

118 If I buy a quarter of a hundred-weight of sugar, and finding I have too much, return nine pounds of it, how much do I keep?

119 If a grocer buys four hundred-weight of sugar; and sells one hundred-weight, three quarters and eighteen pounds of it, how much has he left?

120 If I buy a pound of tea, and use two ounces of it every day, how much will remain at the end of the week?

121 If the carcase of a sheep weighed ten stone and four pounds and three quarters with the offal; and nine stone and one pound without it; what was the weight of the offal.

122 If a waggon loaded weighed three tons two hundred-weight, and three quarters, and the weight

of the waggon was one ton, three hundred-weight and a half, what was the weight of the load?

123 If a farmer has seventy-six acres twenty-seven perches of land, and he sells three acres two roods and a half; how much land has he left?

124 If a lad was bound apprentice for seven years, and ran away when he had served for five years and four calendar months, of how much time will he have robbed his master?

125 If a servant left her place when it only wanted five weeks and four days of the twelvemonth from the time she was hired; how long did she stay in her place? Here you may reckon four weeks to a month, and thirteen months to a year.

126 Take one scruple of rhubarb out of a bottle containing one pound, and how much will remain in the bottle?

127 If I take three grains of magnesia, out of a phial containing just an ounce of it, how much will be left?

128 If I buy half a pound of senna leaves, and sell three ounces and a half, how much do I keep?

129 If there were one scruple of powder of bark in a paper, and I took five grains out of it, how much would be left in the paper?

130 If I buy three doses of Epsom salts, containing one ounce and a half each, and give one dose away, how much shall I have left?

131 If I bought a piece of nankeen, containing ten yards; and cut off two little boy's dresses, each of which took three yards and a quarter and one nail; how much nankeen shall I have left?

132 If I cut three yards and a nail of silk, off a piece containing thirty-six yards; how much is left?

133 If I take a piece of stuff, containing forty yards, and cut off three dresses, each containing seven yards and three quarters; how much shall I have to return?

134 If I cut one yard, one quarter, and one nail of tape, from a piece twelve yards long, how much will be left?

135 If a draper bought a piece of stuff twenty-five yards and three quarters long, and sold seventeen yards and three nails of it, how much was left?

136 If I had a rope a mile long, and cut off eleven hundred feet of it, how much would be left?

137 Take three furlongs from a mile and a half, how much remains?

138 If I had a table three feet nine inches high, and wished to have it only three feet seven inches and a half, in height, how many inches must I cut off the legs of it?

139 If I have three gallons of currants, and take out five quarts; how much will be left?

140 If three gallons and a half be taken from a bushel, how much remains?

141 If I have a peck of split peas, and use half a pint every day for a week, how much will be left?

142 If a shopkeeper has two pecks and a half of oatmeal, and sells three pints, how much will he have left?

143 If the cook sends for a gallon of grots, and uses three half pints, how much will remain?

144 When nine gallons and a half have been drawn out of a cask of ale containing one barrel, how much will be left in it?

145 If a girl leaves the cock of the beer barrel turned, and it is not found out till the cask of nine gallons is reduced to seven gallons and three quarts, how much has been wasted by her carelessness?

146 Suppose the rent of a house and shop to be £45 15*s.* a year; the profits of the business, £360 13*s.* 6*d.*; the expenses of the shopkeeper's family, £165 12*s.* 9*d.*; the education of his children, £50 16*s.*; the taxes, £24 13*s.* 4*d.*; the shopman's wages, £30.; medical attendance £12 6*s.* 8*d.*; and the poor-rates, 12*s.* 6*d.*, how will his accounts stand at the end of the year?

To work this question, and others like it, you have first simply to put down on one side, what the person receives, and on the other, what he spends, in this manner:

| RECEIVED. | £. | S. | D. | PAID. | £. | S. | D. |
|---|---|---|---|---|---|---|---|
| By Profits | 360 | 13 | 6 | For Rent..................... | 45 | 15 | 0 |
| | | | | — Family Expenses...... | 165 | 12 | 9 |
| | | | | — Children's Education. | 50 | 16 | 0 |
| | | | | — Taxes ................. | 24 | 13 | 4 |
| | | | | — Shopman's Wages..... | 30 | 0 | 0 |
| | | | | — Medical Attendance... | 12 | 6 | 8 |
| | | | | — Poor-rates.............. | 0 | 12 | 6 |

Then by Compound Addition, you may find the whole amount of the receipts, and also of the expenses; and by subtracting one amount from the other, you will see how much money the person has, or how much he is in debt.

147 If a head gardener's wages be £78 a year; the expenses of his family £52; his own expenses £9; the education of his children £3 10*s.*; the earnings of his eldest boy, 50 shillings; a year's interest of £50 in the savings' bank, £1 13*s.* 4*d.*; apothecary's bill, £5 10*s.*; rent and taxes, £6 10*s.*; how much will he be able to add to his savings in the savings' bank, at the end of the year?

148 Suppose a servant girl owed thirty shillings when she went to her place, which she paid as soon as she could; that she received 10 guineas wages; spent 7 pounds in clothes, and tea, and sugar; sent a sovereign to her parents; and put fifteen shillings into the savings' bank, what would she have in hand at the end of the twelvemonth?

## COMPOUND MULTIPLICATION.

The next Rule is Compound Multiplication. It teaches us to multiply a sum of money, or a weight, or a measure, by any number which is mentioned. I shall explain it by an example.

If a young person earns 2 pounds 12 shillings and six-pence farthing, in a month, how much does he earn in 5 months?

| | £. | s. | d. |
|---|---|---|---|
| | 2 | 12 | 6¼ |
| | | | 5 |
| Answer, He earns | 13 | 2 | 7¼ |

5 farthings are 1 penny and 1 farthing: put down ¼d. and carry 1d.

5 times 6 pence are 30 pence, and 1 penny I carried makes 31 pence: 31 pence are 2 shillings and 7 pence: put down 7d. and carry 2s.

5 times 12 shillings are 60 shillings, and 2 shillings I carried made 62 shillings: 62 shillings are 3 pounds 2 shillings: put down 2s. and carry £3.

5 times 2 pounds are 10 pounds, and the 3 pounds I carried make 13 pounds: put down £13. The product is £13 2s. 7¼d.

1 How much is seven times nine-pence?

2 Three boys have each one shilling and three-pence; how much have they altogether?

3 If Thomas was sent to the grocer's for twelve pounds of sugar; what did it cost at ten-pence half-penny a pound?

4 Suppose a poor man has just earned five half crowns for wages; how much money has he?

5 How much will nine spelling-books cost, if one is worth two shillings and three-pence?

6 If a quarter of a pound of tea cost two shillings and five pence; what will one pound cost?

7 A lad bought a dozen peg-tops, what did he pay for them, if they were two-pence half-penny a piece?

8 If a yard of cloth cost fifteen shillings and six-pence, what will nine yards cost?

9 What must I give for three pair of gloves, at three shillings and six-pence a pair?

10 When beef is six-pence a pound, how much must I give for seven pounds and a half?

11 If a boy can earn nine-pence a day at weeding, how much will he get in a week?

12 I bought eleven yards of silk at 4*s.* 9*d.* the yard, how much did I give for it?

| | £. | s. | d. |
|---|---|---|---|
| 13 | 17 | 11 | 3½×3 |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 17 | 4 | 2½ | 15 | 19 | 17 | 6 | 16 | 42 | 10 | 3 |
| | | | 2 | | | | 2 | | | | 3 |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 76 | 14 | 5½ | 18 | 179 | 6 | 11 | 19 | 397 | 11 | 4½ |
| | | | 4 | | | | 6 | | | | 5 |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 754 | 13 | 7¼ | 21 | 4192 | 12 | 4 | 22 | 8282 | 11 | 2¼ |
| | | | 6 | | | | 7 | | | | 8 |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 719 | 11 | 9½ | 24 | 1848 | 3 | 7¾ | 25 | 467 | 15 | 4¼ |
| | | | 7 | | | | 3 | | | | 4 |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 7185 | 16 | 4½ | 27 | 7961 | 12 | 6 | 28 | 393 | 14 | 5½ |
| | | | 8 | | | | 10 | | | | 11 |

| | £. | s. | d. | | £. | s. | d. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 4372 | 19 | 11¾ | 30 | 762 | 7 | 5¼ | 31 | 761 | 4 | 9¼ |
| | | | 2 | | | | 12 | | | | 7 |

| | £. | s. | d. |
|---|---|---|---|
| 32 | 8416 | 3 | 7¼ |
| | | | 6 |

| | £. | s. | d. |
|---|---|---|---|
| 33 | 8942 | 3 | 4½ |
| | | | 12 |

| | £. | s. | d. |
|---|---|---|---|
| 34 | 4719 | 6 | 7½ |
| | | | 11 |

| | £. | s. | d. |
|---|---|---|---|
| 35 | 472 | 17 | 7¼ |
| | | | 9 |

| | £. | s. | d. |
|---|---|---|---|
| 36 | 82134 | 18 | 8¾ |
| | | | 12 |

37 If I had three purses, with six and six-pence in each, how much money would there be in all?

38 Suppose a person employed eight men to do a piece of work, and paid each of them thirteen shillings and six-pence, how much did the mens' wages amount to?

39 If a farmer sold twelve lambs at seventeen shillings a piece, how much would he get for them all?

40 How much money should I want in order to pay six men nine shillings and nine-pence half-penny each?

41 If a gentleman pays a carter for nine weeks driving, at the rate of fifteen and six-pence per week, how much will the man receive?

42 If my expenses on a journey came to £1 3s. 6d. one day, how much would it be likely to cost me to travel for five days longer.

43 How much will a man's wages come to in a month, who earns nineteen shillings a week?

44 Allowing 2s. 8d. for a lad's daily board, what would it amount to in a week?

45 If a man spends four and nine-pence a week in meat for his family, how much will it cost him in eight weeks?

46 Multiply £8 19s. 6d. by 11.

47 What is the amount of ten times £196 13s. 4½d,

You will now find no difficulty in the Multiplication of weights and measures, but I shall set down two more examples, and work one of them at length.

Multiply 3 cwts. 2 qrs. 13℔s. by 3.

| | cwts. | qrs. | ℔s. |
|---|---|---|---|
| | 3 | 2 | 13 |
| | | | 3 |
| Answer...... | 10 | 3 | 11 |

3 times 13 ℔s. are 39 ℔s. which are 1 qr. 11 ℔s.: put down 11 ℔s. and carry 1 qr.

3 times 2 qrs. are 6 qrs., and 1 qr. I carried makes 7 qrs., which are 1 cwt 3 qrs.: put down 3 qrs. and carry 1 cwt.

3 times 3 cwt. are 9 cwt., and 1 cwt. I carried makes 10 cwt.: put down 10 cwt.

Multiply 2 gallons 3 quarts 1½ pint, by 2.

| | gall. | qt. | pt. |
|---|---|---|---|
| | 2 | 3 | 1½ |
| | | | 2 |
| Answer...... | 5 | 3 | 1 |

48 12 ℔. 14 oz. 5 dr. × 5
49 8 ℔. 9 oz. 12 dr. × 9.
50 1 cwt. 3 qr. 20 ℔. × 12.
51 18 yd. 2 ft. 11 in. × 4.
52 £188 16s. 3¾d. × 10.
53 3 mi. 1121 yd. × 3.
54 7 gall. 3qt. 1pt. × 7.
55 £29 19s. 7½d. × 6.
56 7 cwt. 2 qr. 13 ℔. × 11.
57 Multiply 5 yd. 3 qr. 1 n. by 5.
58 Multiply 139 chal. 24 bush. 3 p. by 2.
59 Multiply 2 qr. 16 ℔. 12 oz. by 7.
60 Multiply 1 t. 13 cwt. 2 qr. 18 ℔. by 6.
61 Multiply 9 ℔. 8 oz. 4 dr. 2 sc. by 8.
62 Multiply 188 ℔. 4 oz. 15 dr. by 7.

63 53 a. 2 r. 29 p. × 9.
64 14 cwt. 3 qr. 25 ℔. × 4.
65 45 yd. 2 ft. 9 in. 9 l. × 6.
66 12 fl. e. 5 qr. 2 n. × 3.
67 £125 19s. 8¾d. × 5.
68 102 fl. e. 2 qr. 3 n. × 7.
69 7 yd. 3 qr. 3 n. 1½ in. × 8.
70 £742 15s. 0¼d. × 5.
71 £364 14s. 1d. × 10.
72 29 a. 16 p. × 11.
73 £96 16s. 10½d. × 8.
74 114 a. 2 r. 19 p. × 9.
75 £404 11¾d. × 4.
76 129 bush. 2 p. 1 gall. × 10.
77 1 ℔. 5 oz. 4 dr. 2 sc. × 12.
78 38 bush. 3 p. 7 qt. × 7.
79 2 ℔. 9 oz. 6 dr. 1 sc. × 5.

When you wish to multiply by numbers higher than 12, you must use a little ingenuity to find out the best method of doing the sums, for they cannot be done like sums in Simple Multiplication.

Multiply £1 2s. 9d. by 17.

| | £. | s. | d. | |
|---|---|---|---|---|
| | 1 | 2 | 9 | × 5 |
| | | | 12 | |
| | 13 | 13 | 0 | Product or value of 12. |
| | 5 | 13 | 9 | Product or value of 5. |
| Answer | 19 | 6 | 9 | Product or value of 17. |

The first line is the product of 12, the second line is the product of 5: both products added together, make the product or value of 17. I might have multiplied by 10 and 7, and have added the products together, because 10 and 7 make 17, and so on with other numbers, as 11 and 6, or 9 and 8.

---

[*] If you follow this method of noting the products on your slates while working all the following sums, you will be the more likely to avoid blunders.

80 179*l*. 11*s*. 2½*d*. × 17.
81 79 b. hhd. 47 gall. 2 qt. × 17.
82 72 chal. 28 bush. 2 p. × 19.
83 179*l*. 12*s*. 4¼*d*. × 16.
84 47*l*. 12*s*. 11*d*¼. × 16.
85 683*l*. 1*s*. 0½*d*. × 15.
86 32*l*. 13*s*. 7½*d*. × 17,
87 74*l*. 14*s*. 7¾*d*. × 18.
88 24*l*. 13*s*. 6¾*d*. × 15.
89 64*l*. 7*s*. 8*d*. × 17.
90 12*l*. 7*s*, 1*d*. × 14.
91 74 yrs. 12 mo. 1w. × 13.
92 114 ℔. 3 oz. 6 dr. 1 sc. × 14.
93 139 cwt. 2 qr. 19 ℔. × 15.
94 72*l*. 1*s*. 7¼*d*. × 13.
95 42 t. 17 cwt. 3 qr. × 18.
96 834*l*. 13*s*. 6½*d*. × 19.
97 720*l*. 4*s*. 7½*d*. × 22.
98 499*l*. 19*s*. 11¾*d*. × 15.
99 1900 yd. 2 ft. 10 in. × 16.
100 42*l*. 13*s*. 6¼*d*. × 17.
101 46*l*. 17*s*. 10½*d*. × 13.
102 84*l*. 12*s*. 2*d*. × 19.
103 147 ft. 11 in. 8 l. × 19.
104 2 w. tuns 17 gall. 2 qt. × 13.
105 922*l*. 15*s*. 10*d*. × 14.
106 1926*l*. 2*s*. 3*d*. × 14.
107 102*l* 12*s*. 8½*d*. × 13.

Multiply 2*l*. 12*s*. 2½*d*. by 25.

|  | £. | s. | d. |  |
|---|---|---|---|---|
|  | 2 | 12 | 2½ |  |
|  |  |  | 5 × 5 = 25 |  |
|  | 13 | 1 | 0½ | Value of 5. |
|  |  |  | 5 |  |
| Answer........ | 65 | 5 | 2½ | Value of 25. |

Here we first Multiply by 5, and then by 5 again, because 5 times 5 are 25, and 5 times the value of 5, is the product or value of 25.

108 460*l.* 11*s.* 7¼*d.* × 24.
109 21*l.* 12*s.* 6*d.* × 42.
110 11 lb. 9 oz. 13 dwt. × 36.
111 33 yd. 1 ft. 11 in. × 27.
112 4 lb. 12 oz. 15 dr. × 72.
113 45*l.* 2*s.* 3¼*d.* × 49.
114 88 chal. 3 qr. 7 bush. 2 p. × 144.
115 37*l.* 15*s.* 5¾*d.* × 96.
116 67*l.* 3*s.* 10¾*d.* × 84,
117 72 b. hhd. 48 gall. 2 qt. × 99.
118 57*l.* 19*s.* 1*d.* × 64.
119 902 t. 14 cwt. 1 qr. × 88.
120 41 a. 3 r. 32 p. × 120.
121 672*l* 0*s.* 11¾*d.* × 108.
122 11*l.* 11*s.* 11¼*d.* × 121.
123 448*l.* 16*s.* 7*d.* × 70.

Multiply 6*l.* 17*s.* 1¼*d.* by 59.

| £. | s. | d. | |
|---|---|---|---|
| 6 | 17 | 1¼ × 3 | |
| | | 7 × 8 + 3 = 59. | |
| 47 | 19 | 8¾ | Value of 7. |
| | | 8 | |
| 381 | 17 | 10 | Value of 56. |
| 20 | 11 | 4¼ | Value of 3. |
| 402 | 9 | 2¼ | Value of 59. |

In this example, I multiply first by 7, which gives the product or value of 7.

Multiply the product of 7 by 8, and it gives the product of 8 times 7, or 56.

Lastly, I multiply the top line by 3, which gives the product of 3, and I add this to the product of 56 which gives the whole product or value of 59.

124 13*l.* 2*s.* 4½*d.* Multiply by 52.
125 10*l.* 17*s.* 9¼*d.* Multiply by 63
126 17*l.* 11*s.* 11¼*d.* Multiply by 91.
127 42 cwt. 1 qr. 19 lb. Multiply by 59.
128 63 W. hhd. 61 gall. 2 qt. Multiply by 35.
129 48*l.* 17*s.* 6½*d.* Multiply by 58
130 102 qrs. 6 bush. 3 p. Multiply by 61.
131 83*l.* 15*s.* 7½*d.* Multiply by 77.
132 501*l.* 14*s.* 8*d.* Multiply by 119.
133 82 days. 18 hrs. 42 min. Multiply by 17
134 72*l.* 11*s.* 4¼*d.* Multiply by 94.
135 60*l.* 9*s.* 7¼*d.* Multiply by 34.
136 542 yds. 3 qr. 1 n. Multiply by 112.
137 14 mi. 7 fur· 200 yds. Multiply by 29.
138 14*l.* 18*s.* 3¼*d.* Multiply by 27.
139 98*l.* 13*s.* 9¾*d.* Multiply by 19.
140 18 cwt. 3 qr. 13 lb. 14 oz. Multiply by 18.
141 68*l.* 19*s.* 4½*d.* Multiply by 141.
142 55 yds. 2 ft. 11 in. Multiply by 97.
143 46 w. t. 2 hhd 36 gal. 3 qt 1 p. Multiply by 42.
144 89*l.* 14*s.* 1¼*d.* Multiply by 87.
145 99*l.* 13*s.* 8¼*d.* Multiply by 140.
146 36 w. t. 3 hhd. 41 gall. 2 qt. Multiply by 33.
147 56*l.* 14*s.* 2½*d.* Multiply by 137.
148 15 yd. 2 qr. 3 n. Multiply by 95.
149 43*l.* 13*s.* 9¼d. Multiply by 25.
150 49*l.* 17*s.* 6¾*d.* Multiply by 120.
151 78*l.* 16*s.* 11½*d.* Multiply by 79.
152 98 yd. 3 qr. 2 n Multiply by 121.
153 93*l.* 11*s.* 10½*d.* Multiply by 29.
154 46 yd. 1 qr. 3 n. Multiply by 49.
155 9 cwt. 3 qr. 27 lb. Multiply by 47.
156 41*l.* 9*s.* 7¾*d.* Multiply by 143.
157 95*l.* 15*s.* 4¾*d.* Multiply by 108.
158 65*l.* 14*s.* 2¼*d.* Multiply by 95.
159 6 cwt. 2 qr. 19 lb. Multiply by 39.
160 58*l.* 1*s.* 11¾. Multiply by 98.
161 39*l.* 8*s.* 10½*d*, Multiply by 69.
162 18 cwt. 2 qr. 17 lb. Multiply by 45.

If the Multiplier should be much higher than a hundred, you will be obliged to Multiply by one 10 after another in the following manner:—

Multiply 1*l.* 14*s.* 4*d.* by 324.

| | £. | s. | d. | |
|---|---|---|---|---|
| | 1 | 14 | 4 | × 4 |
| | | | 10 | |
| | 17 | 3 | 4 | Value of 10 × 20 =0. |
| | | | 10 | |
| | 171 | 13 | 4 | Value of 100. |
| | | | 3 | |
| | 515 | 0 | 0 | Value of 300. |
| | 34 | 6 | 8 | Value of 20. |
| | 6 | 17 | 4 | Value of 4. |
| Answer | 556 | 4 | 0 | Value of 324. |

First I Multiply by 10, and then by 10 again, which gives the value of 100.

This multiplied by 3, gives the value of 300.

To find the value of 20, I Multiply the value of 10 by 2, and to find the value of 4, I Multiply the line at the top by 4.

When I have found the value of 300,—of 20,—and of 4, I add the three values together, and the total is the value of 324.

163 491*l.* 18*s.* 11d¾*d.* Multiply by 267.
164 973*l.* 13*s.* 8¼*d.* Multiply by 193.
165 5 cwt. 3 yr. 19 lb. 13 oz. Multiply by 157.
166 17 cwt. 2 qr. 23 lb. 15 oz. Multiply by 212.
167 12 cwt. 1 qr. 27 lb. 12 oz. Multiply by 142.
168 873*l.* 14*s.* 6¼*d.* Multiply by 399.
169 108 B. tuns, 3 hhd. 23 gall. × 514.
170 43 tuns, 1 hhd. 38 gall. Multiply by 712.
171 796*l.* 18*s.* 7¾d. Multiply by 203.
172 169 tuns, 2 hhd. 51 gall. Multiply by 906.
173 908*l.* 12*s.* 11¾*d.* Multiply by 443.
174 1903*l.* 17*s.* 9½*d.* Multiply by 1906.

175 If a man has been brewing, and finds he has enough beer to put into three 9 gall. casks, provided he does not fill them by a gallon each, how much beer has he brewed?

176 I have 9 casks of ale, each containing 18 gallons, how much have I in the whole? And how much will it be worth at 4d. the quart?

177 If I wanted two pairs of sheets, each sheet to be two yards and a half long, and twice the width of the linen; how much must I buy?

178 How much print must a young woman buy, if she wished to cut out twelve frocks, each of which would take three quarters of a yard for the body; and two breadths, each half a yard a nail and a half long, for the skirt?

179 Suppose you were going to make a curtain, two yards and a quarter long, and seven breadths wide, how many yards of dimity must you purchase?

180 If the skirt of a dress contains five breadths of bombazine, each of them one yard, one quarter, and one nail in length; and the body takes two yards, three quarters and three nails; how much will the whole dress take?

181 You have just reckoned how much cloth will be wanted for one curtain, how much must be bought for 3 such curtains?

182 What quantity of gooseberries would there be in twenty baskets, each of which contained three gallons, two quarts and a half?

183 What quantity of lead will a plumber want, to line three cisterns; if each cistern required four hundred weight, three quarters, and nineteen pounds?

184 Suppose a woman wishes to make two quarts of currant jelly; how much sugar must she buy if she means to put one pound eight ounces of sugar to each quart of juice?

185 If a butcher kills five sheep, each of which weighs, without the offal, eleven stone, two pounds, and a half; how much mutton will he have to sell? A stone of butcher's meat is 8 lb.

186 If sixteen children have gleaned a gallon and a half of wheat apiece, how many bushels are collected in all?

187 If a man allows each of his seven horses three quarters of a peck of corn in a day; how much do they eat altogether in a year?

188 If there are in a dairy twelve pans, and each of them contains four gallons, one quart and one pint of milk; how many gallons are there altogether?

189 If a man has three nine gallon casks, and three eighteen gallon casks, and three 36 gallon casks, how much beer must he brew to fill them all?

190 If a child has attended school regularly for ten lunar months, one week, and four days, every year, from the time she was seven years old, till she completes her fourteenth year: what length of time has she attended school.

---

# COMPOUND DIVISION.

Suppose a person whose business it was to pay wages at the end of the week, had 17*l.* 16*s.* 3*d.* to divide equally among 9 persons. The wages of each person may be found by Compound Division.

| persons | £. | s. | d. | |
|---|---|---|---|---|
| 9 ) | 17 | 16 | 3 | |
| | 1 | 19 | 7 | Each person's wages. |

9 in 17*l.* will go once, and 8*l.* over: put down 1, and carry 8*l.* to the shillings.

8*l.* 16*s.* are 176 shillings: 9 in 176 shillings will go 19 times, and 5*s.* over: put down 19, and carry 5*s.* to the pence.

5*s.* and 3*d.* are 63 pence: 9 in 63 pence will go 7 times: put down 7*d.*

The Answer is 1*l.* 19*s.* 7*d.*, which is a ninth part of the whole, and is as much as each of the 9 persons must receive.

1 What is the half of 2 shillings and sixpence?

2 What is the quarter of half a crown?

3 If I divided 5 shillings amongst eight little boys, how much would each of them get?

4 Suppose a blacksmith earns eighteen shillings a week, how much is that in a day?

5 If a child earns 30 pence a week, how much is that in a day?

6 Divide six and three-pence among three persons.

7 If I have five and eight-pence to divide amongst four men, how much will each of them receive?

8 If I gave eight and eight-pence halfpenny for eleven yards of calico, how much did it cost by the yard?

9 If there are 10 yards of linen in a pair of sheets, and they cost 25 shillings, what was the price per yd. of the linen?

10 Divide eighteen shillings and eleven-pence halfpenny by seven.

11 If I gave seventeen and six-pence, for two girl's frocks, one of which took six yards, and the other four, what was the price of the stuff per yard?

12 If seven pair of gloves cost me 15 shillings and 10 pence halfpenny, how much is that for each pair?

13 If I paid the butcher one pound 18 shillings, for 8 weekly bills, how much did I spend each week on an average?

14 What is two-thirds of £60?

15 If a little boy's allowance is 6d. a week, and he spends 3d. the day he gets it, how much does he leave for each day during the rest of the week?

16 *5l.* 8*s.* 8*d.* ÷ 4
17 1*l.* 7*s.* 2*d.* ÷ 3
18 7*l.* 3*s.* 9*d.* ÷ 5
19 10*l.* 5*s.* 3*d.* ÷ 6
20 29*l.* 16*s.* 9*d.* ÷ 7
21 29*l.* 4*s.* 10*d.* ÷ 8
22 59*l.* 18*s.* 3¾*d.* ÷ 9
23 14*l.* 16*s.* 11¼*d.* ÷ 10
24 58*l.* 6*s.* 0½*d.* ÷ 11
25 92*l.* 5*s.* 0*d.* ÷ 12
26 29*l.* 13*s.* 6*d.* ÷ 8
27 33*l.* 19*s.* 0½*d.* ÷ 10
28 268*l.* 13*s.* 3¼*d.* ÷ 6
29 968*l.* 10*s.* 5*d.* ÷ 12
30 249*l.* 1*s.* 11*d*½*d.* ÷ 9
31 1260*l.* 5*s.* 8¾*d.* ÷ 7
32 1101*l.* 14*s.* 6¼*d.* ÷ 11
33 8890*l.* 13*s.* 8½*d.* ÷ 4

34 16546*l.* 12*s.* 0¼*d.* ÷ 3
35 82382*l.* 13*s.* 0½*d.* ÷ 5
36 11641*l.* 0*s.* 6¼*d.* ÷ 11
37 8210*l.* 2*s.* 6*d.* ÷ 9
38 3134*l.* 14*s.* 8*d.* ÷ 7
39 2384*l.* 9*s.* 6¼*d.* ÷ 2
40 1000*l.* 10*s.* 5*d.* ÷ 3
41 96200*l.* 17*s.* 7¾*d.* ÷ 8
42 1441*l.* 4*s.* 6*d.* ÷ 6
43 1527*l.* 16*s.* 11¼*d.* ÷ 10
44 1781*l.* 15*s.* 3*d.* ÷ 9
45 1849*l.* 14*s.* 2½*d.* ÷ 5
46 23314*l.* 0*s.* 5*d.* ÷ 4
47 4465*l.* 10*s.* 0½*d.* ÷ 12
48 5481*l.* 17*s.* 4¼*d.* ÷ 7

Divide 14 pounds 12 ounces 11 drams by 8.

$$\begin{array}{r|rrr} & \text{lb.} & \text{oz.} & \text{dr.} \\ 8) & 14 & 12 & 11 \\ \hline & 1 & 13 & 9\frac{3}{8} \end{array}$$

8 in 14 pounds will go once, and 6 pounds over: put down 1 for the quotient, and carry 6 lb. to the ounces.

6 pounds 12 ounces are 108 ounces; 8 in 108 ounces will go 13 times, and 4 over: put down 13 and carry 4 oz. to the drams.

4 ounces 11 drams are 75 drams; 8 in 75 drams will go 9 times and three over: put down 9 and carry 3.

The 8th part of 3 drams is 3-8ths of 1 dram; put down ⅜ of a dr.

49 If I had a quantity of lead, weighing three hundred weight two quarters, and eight pounds: what would be the weight of one quarter of it?

50 If I have one pound, fourteen ounces, and three quarters of an ounce of tea, and it is to last me six weeks, how much may I weigh out for the first week's use?

51 What is the fifth part of three pounds, nine ounces, five drachms, two scruples, and fifteen grains?

52 If I take five drachms of bark powder, and divide it into 12 doses; how much do I put into each dose?

53 How much linen should I have for one shirt, if I cut out eight from a piece of twenty-eight yards?

54 If a piece of linen, containing forty-eight yards and a half, will make four pair of sheets; how much will it take to make one sheet?

55 If nineteen yards of check made eight little frocks, how much was in each?

56 71 cwt. 2 qrs. 7 lbs. ÷ 6.
57 41 cwt. 3 qrs. 19 lbs. ÷ 5.
58 8 lbs. 11 oz. 4 dr. ÷ 10.
59 24 tons, 12 cwt. 3 qrs. 24 lbs. ÷ 9.
60 123 cwt. 3 qrs. 25 lbs. ÷ 7.
61 287 mi. 6 fur. 31 po. ÷ 7.
62 180 feet, 9 in. 2 b. c. ÷ 4.
63 48 yds. 2 ft. 6 in. ÷ 12.

64 If it took five yards, two quarters, and two nails of print, to make ten aprons, what was the length of each?

65 What is the quarter of five yards and a half of cloth?

66 How many days are there in three quarters of a year? And how many hours?

67 If a bushel and a half of wheat, were divided amongst six people, how much would there be for each?

68 If a cable, one mile in length, were divided into four, what would be the length of each piece?

69 Divide 564 yd. 3 qr. 3 n. by 3.
70 Divide 871 mi. 7 fur. 33 p. by 8.
71 Divide 77 hrs. 55 mi. 32 sec. by 5.
72 Divide 55 t. 18 cwt. 1 qr. 12 lb. by 7.
73 Divide 73 B. bar. 21 gall. 3 qt. by 10.
74 Divide 54 chal. 21 bush. 3 p. by 11.
75 Divide 33 W. Tun. 2 hhd. 39 gall. by 2.

76 If a cow gave 45½ gallons of milk in a week; how much is that at each milking? Cows are milked twice in a day.

77 If I filled six mugs with a quart and a half of milk; how much did each mug hold?

78 How many days are there in a quarter of a year?

79 If a lady had three married daughters, and spent an equal part of a whole year at each of their houses; how long did she stay at one of them?

80 Divide 66 ft. 3 in. 11 li. by 6.
81 Divide 16 t. 3 cwt. 1 qr. 21 lb. by 7.
82 Divide 57 yd. 1 qr. 1 n. by 9.
83 Divide 43 chal. 8 bush. 3 p. by 4.
84 Divide 75 W. hhd. 22 gall. 2 qt. by 3.
85 Divide 32 B. tun. 26 gall. by 7.
86 Divide 8 lb. 8 oz. 4 dr. by 2.
87 Divide 44 lb. 3 oz. 14 dwt. 17 gr. by 12.
88 Divide 43 lea. 2 mi. 800 y. by 10.
89 Divide 70 lb. 3 oz. 2 dr. by 7.

If the Divisor is more than 12, you must either work the sum by Long Division, or divide by two numbers which will be equal to the Divisor when they are multiplied together. Here is an example of each method.

Divide 47*l.* 11*s.* 4*d.* by 13.

```
         £.   s.   d.    £.   s.   d.
   13 ) 47   11    4  (  3   13   2 2/13 Answer.
        39
        --
        ·8
        20
       ---
   13 ) 171 ( 13
        13
        --
        ·41
        39
        --
        ·2
        12
        --
   13 ) 28 ( 2
        26
        --
        ·2 = 2/13
```

Divide 182*l.* 12*s.* by 24.

```
          £.    s.   d.
    ( 4 ) 182   12   0
 24 { ×  ----------------
    ( 6 ) ·45   13   0
    ---------------------
       £. ·7    12   2 Answer.
```

90 Divide 107*l.* 17*s.* 6*d.* by 15.
91 Divide 59*l.* 11*s.* 8¾*d.* by 18.
92 Divide 280*l.* 4*s.* 9¾*d.* by 20.
93 Divide 895*l.* 5*s.* 6*d.* by 24.
94 Divide 1202*l.* 6*s.* 6*d.* by 21.
95 Divide 20*l.* 19*s.* 4¼*d.* by 27.
96 Divide 10*l.* 18*s.* 8*d.* by 33.
97 Divide 97*l.* 10*s.* ¾*d.* by 32.
98 Divide 1*l.* 5*s.* 6¼*d.* by 35.
99 Divide 3089*l.* 4½*d.* by 42.
100 Divide 79*l.* 6*s.* 6½*d.* by 44.
101 Divide 27*l.* 7*s.* 8½*d.* by 45.
102 Divide 187*l.* 1*s.* 7*d.* by 49.
103 Divide 1 mile, 266 yds. by 28.
104 Divide 272 feet, 6 in. by 19.
105 Divide 100 mi. 2 fur. 100 yds. by 9.
106 Divide 22 yds. 2 qrs. 2 n. by 8.
107 Divide 300 E. E. 4 qrs. 3 n. by 16.
108 Divide 96. Fr. E. 5 qrs. 1 n. by 14.
109 Divide 100 Fl. E. 2 qrs. 3 u. by 11.
110 Divide 3489*l.* 18*s.* 11½*d.* by 50.
111 Divide 386*l.* 4*s.* 3*d.* by 54.
112 Divide 22*l.* 10¾*d.* by 56.
113 Divide 25*l.* 13*s.* 5¼*d.* by 64.
114 Divide 72*l.* 9*s.* 10½*d.* by 66.
115 Divide 828*l.* 3*s.* 5¾*d.* by 72.
116 Divide 123 yds. 2 qrs. 2 n. by 3.
117 Divide 416 yds. 1 qr. 3 n by 10.
118 Divide 7 years, 4 mo. 9 days by 6.
119 Divide 16 hours, 40 min. 28 sec. by 3.
120 Divide 29 days, 6 hrs. 25 min. by 12.
121 Divide 43 weeks, 5 days, 10 hrs. by 7.
122 Divide 935*l.* 14*s.* 6¼*d.* by 81
123 Divide 188*l.* 7*s.* by 84.
124 Divide 5*l.* 17*s.* 1*d.* by 90.
125 Divide 95*l.* 5*s.* 9¼*d.* by 96.
126 Divide 10041*l.* 7*s.* 3½*d.* by 100.
127 Divide 826*l.* 5*s.* 2¾*d.* by 108.
128 Divide 551*l.* 16*s.* 9¾*d.* by 110.
129 Divide 39*l.* 3*s.* 8½*d.* by 121.

130 Divide 574*l.* 19*s.* by 144.
131 Divide 51 years, 130 days by 24.
132 Divide 81 years, 5 mo. 29 days by 31.
133 Divide 42 chaldrons, 28 bushels by 9.
134 Divide 200 bush. 3 pecks, 1 gall. by 3.
135 Divide 241*l.* 5*s.* 11*d.* by 17.
136 Divide 169*l.* 14*s.* 6*d.* by 31.
137 Divide 332*l.* 2*s.* 8*d.* by 47.
138 Divide 253*l.* 2*s.* 11*d.* by 58.
139 Divide 386*l.* 15*s.* 9½*d.* by 62.
140 Divide 983*l.* 5*s.* 8½*d.* by 75.
141 Divide 764*l.* 4*s.* 8½*d.* by 86.
142 Divide 173*l.* 12*s.* 9¼*d.* by 94.
143 Divide 2523*l.* 9*s.* 1¼*d.* by 98.
144 Divide 81*l.* 10*d.* by 109.
145 Divide 39 pecks, 1 gall. 1 pt. by 5.
146 Divide 150 gall. 1 qt. 1 pt. by 8.
147 Divide 480 chal, 15 bush. 2 pks. by 14.
148 Divide 119 chal. 5 bush. 1 pk. by 13.
149 Divide 75 bushels, 2 pecks by 4.
150 Divide 1000*l.* by 137.
151 Divide 2136*l.* 19*s.* 1*d.* by 164.
152 Divide 10101*l.* 9*s.* 6¼*d.* by 183.
153 Divide 22083*l.* 7*s.* by 215.
154 Divide 12162*l.* 12*s.* 11¾*d.* by 406.
155 Divide 361072*l.* 2*s.* 3*d.* 1012.
156 Divide 877*l.* 1*s.* 8*d.* by 100.
157 Divide 9706*l.* 10*s.* 7½*d.* by 100.
158 Divide 1581*l.* 12*s.* 6*d.* by 120.

159 If a young man undertakes a situation, the profits of which are expected to be 75 pounds a year, how much may he spend per week, if he wishes to lay by one-fifth of his income?

160 If a labouring man wants to have £30 to furnish his house before he marries, how much must he lay by every week, that he may be able to marry in eleven months ?

161 Suppose a tradesman's business clears him £370 a year, how much may he allow himself to spend

each month if he wishes to lay by such a sum of money every year as shall in three years' time amount to £60.

162 What may that person spend weekly whose annual income is £400, and who wishes to lay by one-sixth of his income?

163 1200*l.* 7*s.* 8*d.* ÷ 40.
164 30*l.* 2¼*d.* ÷ 80.
165 362*l.* 5*s.* ÷ 80.
166 413*l.* 15*s.* ÷ 60.
167 285*l.* 10*s.* ÷ 71.
168 319*l.* 12*s.* 7¼*d.* ÷ 233
169 400*l.* ÷ 43.
170 1207*l.* 5*s.* 3¾*d.* ÷ 99.

Some times you may wish to do Compound Multiplication sums which have fractions or parts in the Multiplier. These you are now ready to understand. Here are some examples.

Multiply 6*l.* 16*s.* 4*d.* by 3½.

| | £. | s. | d. |
|---|---|---|---|
| | 6 | 16 | 4 |
| | | | 3½ |
| | 20 | 9 | 0 value of 3 |
| 6*l.* 16*s.* 4*d.* ÷ 2 = | 3 | 8 | 2 value of ½ |
| Answer | £.23 | 17 | 2 value of 3½ |

Multiply 12*l.* 2*s.* 6*d.* by 5¾.

| | £. | s. | d. |
|---|---|---|---|
| | 12 | 2 | 6 |
| | | | 5¾ |
| | 60 | 12 | 6 value of 5 |
| 12*l.* 2*s.* 6*d.* ÷ 2 = | 6 | 1 | 3 value of ½ |
| 12*l.* 2*s.* 6*d.* ÷ 4 = | 3 | 0 | 7½ value of ¼ |
| | 69 | 14 | 4½ value of 5¾ |

Multiply 10*l.* 4*s.* 7*d.* by 3 and two-fifths.

| £. | s. | d. | | | | |
|---|---|---|---|---|---|---|
| 10 | 4 | 7 | | 10 | 4 | 7 |
| | | 3$\frac{2}{5}$ | | | | 2 |
| 30 | 13 | 9 val. of 3. | 5) | 20 | 9 | 2 |
| 4 | 1 | 10 val. of $\frac{2}{5}$ | | | | |
| | | | | 4 | 1 | 10 val. of $\frac{2}{5}$. |
| Ans. £.34 | 15 | 7 value of 3$\frac{2}{5}$. | | | | |

The last sum is the only one I need explain. To find the value of 3, I multiply by 3, and to find the value of 2 fifths I multiply by 2 and divide by 5: because 2 fifths of £10. 4s. 7d., is the same as 1 fifth of 2 times £10. 4s. 7d.: for it was shown in Simple Division, at page 66, that 3 fourths of 12, is the same as one fourth of 3 twelves; and the same thing is true, spoken of other numbers and other fractions.

171 How much might that gentleman spend in a month, whose yearly income was to be fifteen hundred pounds, if he intended to devote £150 per annum to the payment of his father's debts, and to expend £50 a year in charity?

172 With the same income, how much might he spend in a month, if he had no debts to pay, but intended to lay by £100 per annum for the purchase of an estate, and to give away £5 every month.

173 If a person be a whole year out of employment, and contract debts during that time to the amount of £160, and then obtains a situation producing him £366 per annum; how soon will he be able to pay off the debt, if his annual expenditure be £350?

174 How long might a person live upon £36. 10s., at the rate of 2 shillings a day?

175 If a man had laid up in the Savings' Bank, the sum of £27. 7s. 6d., how long would it last him if he took out 12s. a week?

176 If two gentlemen and their three cousins, take a journey which cost them £120, how much more will the cousins have to pay, than the first two gentlemen, provided they divide the expense equally amongst them?

177 Suppose a gentleman left £500 to be equally divided among his 5 nephews and 6 nieces; how much would fall to the nephews, and how much to the nieces?

178 Suppose a gentleman left 5 sixths of his estate worth £1560 to a son, and the rest to a nephew; how much would fall to the share of each?

179 How much would a person lose by a business, in which the whole returns were £5200, and the expenditure was 2-9ths more than that sum?

180 What would be the value of $\frac{3}{4}$ of a box of oranges which cost £1. 15s. 6d.

181 If a piece of linen cost £2. 16s., what is the value of 7-8ths of it.

182 Suppose I agree to bear three-fifths of the expenses of a journey, and they amount to £53. 10s.; what must I pay?

183 How much will a landlord have to receive, who on account of a bad harvest, agrees to excuse his tenant two fifths of his rent, which should have been £136.

184 If a bankrupt owes the sum of 1939*l*, and can only pay 15*s*. in the pound: that is to say, three quarters of what he owes, how much can he pay?

185 If a shopkeeper's receipts amounted in a year to the sum of 1590*l*. 19*s*. 8*d*, but only 2 9ths of this was profit, what did he gain by his business?

186 Suppose a house and furniture, worth 348*l*. be insured for seven eighths of its value, what is the amount insured?

187 What does that person lose by a debt of 1500*l*. who never receives more than five eighths of it?

188 If one estate be worth 97360*l*., and another be estimated at two thirds of this value, what is the worth of the latter?

189 If a person bought a horse for 75*l.*, and sold it for three eighths of what he gave for it, what did he lose by the sale of it?

190 Suppose a gentleman bought an estate for the sum of 5400l., and sold it at a loss of 2 ninths of its value, what did he get for it?

191 How much is 11 twelfths of 57*l.* 18*s.*?

192 What is nine 10ths of 47368*l.*?

193 A quarter's wages (wages for a quarter of a year) at 13 guineas per annum?

194 A month's wages at 18*l.* per annum? In this sum, and the following ones, you must reckon 13 months to the year.

195 Half a year's wages at 15 guineas per annum?

196 Three quarters' wages at 12 guineas per annum?

197 Five quarters' wages at 13*l.* per annum?

198 Ten months' wages at 11*l.* per annum?

199 Thirteen months' wages at 13*l.* per annum?

200 Eleven months' wages at 4*l.* 4*s.* 0*d.* a year?

201 A year and a half's salary at 20 guineas per annum?

202 Four months' salary at 80*l.* per annum?

203 Seventeen weeks' salary at 100 guineas per annum?

204 Eleven weeks' allowance at 100 guineas per annum?

205 Ninety weeks' travelling expenses at £200 a year?

206 Seven months' salary at 40 guineas per annum?

207 Eight months' board wages at 20*l.* per annum?

208 If the yearly income of a person be 165*l.*, what is that per week?

209 If a person spends two thirds of his income, and that income be 90 guineas a year, how much does he spend? and what remains?

# MISCELLANEOUS QUESTIONS.

1 In the numerous Savings' Banks in Great Britain, is deposited the sum of £14,500,000, the number of depositors is 410,000. What is the average sum deposited by each?

2 If a servant whose yearly wages are thirteen pounds, is out of place for six weeks, how much does she lose?

3 If a labouring man, who gets 12s. a week, goes in debt 3s. one week, how much will he have to spend in the next week?

4 If Hannah has 2 lbs of butter to sell at 11d. the pound, and Susan has 18 eggs to sell at 8d. the dozen, and they buy the goods of each other: how must they settle the account?

5 It is asserted that 1,000,000,000 bricks are made in England in a year. What is the worth of this number at 40s. a thousand? And what is the amount of the duty paid to government, which is 5s. 10d. a thousand?

6 In 1811, the population of France was estimated at forty-three millions, nine hundred and thirty-seven thousand, one hundred and forty four: while that of Great Britain was considered to be twelve millions three hundred and fifty three thousand. Which country contained the greatest number of inhabitants, and by how many?

7 How much must I pay for 24 stone of flour at 3s. 9d.?

8 What sum of money divided amongst 6 persons would allow each of them £.19 18s. 7d.

9 How much will two ounces of tea cost, if it be sold at 6s. 6d. the pound?

10 How many times must I go up and down a walk which is 440 yards long, in order to have walked a mile?

11 If a family use ¼lb. of five-shilling tea, with 3 lb. of eight-penny sugar every week; how much will it come to in seven years?

12 If a young man begin at 21 years of age to smoke 1 penny worth of tobacco daily, and continue to do so till he be 60 years old, how much will his tobacco cost him?

13 If a little boy earns three halfpence a day, six days in the week, out of school hours, in going of errands, what will that come to in a year?

14 Suppose three young men working together, and receiving the same wages. Thomas says, I like good beer, and now I am my own master I will allow myself three pints a day; it only costs 4d a quart; and I will have one penny worth of tobacco to smoke with it.

George says, I drink water and do not like tobacco, so I will put as much into the savings' bank as Thomas's beer and tobacco cost him; perhaps my parents may want a little help, or if I should marry I shall want money to furnish my cottage, and make my wife comfortable.

James says, I wish to save money too. but I shall not like to go without any beer, I will allow myself one pint a day; as for tobacco, I am too young to smoke, so when my beer is paid for, I will put the remainder of what George spends into the savings' bank.

How much would Thomas spend in one year in his beer and tobacco?

How much would George save in seven years?

How much would James save in seven years?

15 What sum of money must that have been which, when divided amongst five persons, yielded to each of them £67 18s. 4¼d?

16 Suppose a footman had been hired for fifteen guineas a year, and that his master died at the end of three calendar months, in which time the man had contracted debts at different shops, for linen, tea and sugar, &c., to the amount of £5; and that he had brought fifteen shillings from his last place: how much would he still owe?

17 What would be the sum a man would have in the Savings' Bank, who began to put 2s. a week

into the bank, when he was 18 years old, and continued to do so regularly, till he was five and twenty?

18 Between the years 1802 and 1817, two hundred thousand pounds were expended in making roads and bridges in the Highlands of Scotland, and 3200 men during that period were employed. What were the yearly wages of each man on an average?

19 What would be the sum of money acquired in five years, by a man, who put two shillings a week regularly into the Savings' Bank, and who on an average did not take out more than 4d. a week?

20 How much would the father of a family pay for tea and sugar in the year; if they used ¼ lb. of 5 shillings tea, and 4 lb. of seven-penny sugar every week?

21 If a man wanted to know how many miles he had to walk to a certain house, and counted the number of steps he took, and found it was two thousand; and then measured the length of his steps and found it exactly a yard, how far had he walked?

22 How much magnesia must I buy, if I want 20 doses, each weighing two grains?

23 If a family consume one pound and a half of butter per week, how much is that in a year?

24 If I had 3 quarts and twelve pints of strawberries to divide among twenty-four children, how much might each have? Reckon 4 gills to a pint.

25 If I distribute a peck of plums to twelve children, how much will each have?

26 How many pints of nuts are there in three pecks and a half?

27 What must I pay for 15¾ lbs. of butter, at 13d. per pound?

18 If a person whose annual income was £150, and who had been accustomed for ten years to lay by 15 pounds a year, were to be detained by sickness from his employment, and lose his salary for three months, and have to meet the apothecary's bill of £.8 16s. 8d., besides paying for half a dozen of port wine at 32 shillings the dozen, how much of his savings would be left at the end of the year?

29 If a man earns 11*s.* in a week, how much is that in a day? (Remember there are only 6 working days in a week.)

30 And how much in a month of 28 days? *i. e.* 24 working days.

31 If I pay a person 5*s.* a day, how much will it amount to in 28 days?

32 How much in 13 times that space of time?

33 If one yd. of cloth cost 4*s.* 4*d.*, how much will 10 yds. cost?

34 If a week's rent be 2*s.* 6*d.*, how much will it amount to in 6 weeks?

35 If a man could earn 18*s.* in the week, but spends 2 days at the Alehouse, instead of going to his work, how much will he have to receive?

36 If a child's schooling comes to 18*s.* in a year, how much is that per week?

37 If John owes Thomas 9*s.*, and Thomas owes John 7*s.* 6*d.*, how must they settle it between them?

38 If a person has an allowance of 1*l.* a month, and spends 23*s.* the first month, how much will he have left for the next month?

39 How many groats are there in twenty three pounds, seventeen shillings, and eight-pence?

40 What is the sum of 8 sovereigns, 8 half sovereigns, 8 crowns, 8 half crowns, 8 groats, and 8 pence?

41 What is the product of 1028*l.* 10*s.* 6*d.* × 550.

42 Suppose I bought linen at *two and twenty pence* (the shopkeepers' common term for 22*d.*) the yard; and cut out 4 shirts, allowing 3½ yds. to each, what would the set of shirts cost me?

43 The daily allowance to each person in a man of war is as follows. 1 lb. of bread, 1 oz. of cocoa, 1¼ oz. of sugar, 1 lb. of fresh meat, or ¾ lb. of salt meat, ½ lb. of vegetables. What quantity of each kind of provisions must be taken on board to serve 400 men for a year?

44 If the curtains of a bed are 2 yds. long, and there are 8 breadths in the curtains, how many yards

are there? and how much will it come to, if the stuff costs 10*d.* a yd.?

45 If I buy 93 yds. of worsted binding, at 2*d.* per yd., how much will it come to?

46 If it takes 8 yds. of good print, at 1*s.* 9½*d.* per yd., to make a gown, what will it cost?

47 Suppose a person has to pay 3*s.* 4*d.* a week for rent, how much is that in eight years?

48 If a poor person pays 3*s.* 6*d.* a week for rent, how much is that in a year?

49 If a man smokes 2 oz. of tobacco a week, at 3½*d.* an oz., how much is that in 7 years?

50 If a servant wastes 3 pennyworth of bread in a week, how much is that in a year?

51 If I buy 3 pair of shoes in a year at 6*s.* 10*d.* the pair, how much does it come to in 10 years?

52 What would be the worth of two hundred and fifty-five cheeses, weighing 13 lbs. each, at 8½*d.* the lb.?

53 In the great plague of London, in the year 1665, the number of deaths were, in June, 590; July, 4,129; August, 20,046; September, 26,230; October, 14,373; November, 3,449; December, less than 1,000. How many died in a day on an average?

54 If a person walks three miles and a half every day, how far does he walk in the year?

55 When a patient is ordered to take some medicine eight times in the twenty-four hours, how long may he be still at once without being disturbed by the attentions of the nurse?

56 What is the annual expense of housekeeping to a family whose rent, taxes and poor-rates, amount to 50*l.* a year, and their weekly bills average 18*s* 11¾*d.*?

57 Suppose a servant leaves her place, and before she gets into another, incurs a debt of 40*s.* for board and lodging, and 15 shillings for clothes, how much will she have to take from the next quarter's wages to repay it?

58 How much will she have gained or lost at the end of the first year in her new situation, if by changing her place, she gets 10 guineas instead of 9 for wages?

59 A herring and a half may be got for three halfpence, how many could be had for 109*d.*?

60 In Yorkshire, cottage girls will knit a pair of stockings at spare times in a fortnight, how many pairs could a girl knit in a year?

61 If one man could mow 1½ acre of grass in a day, how many would be required to mow 18 acres in the same time?

62 And how many to mow 3 acres in half a day?

63 And how many to mow 18 acres in half a day?

64 If one man could reap half an acre, how many men would be required to reap 2 acres?

65 If two acres could be reaped by 1 reaper in a day, how many could be reaped by 6 reapers in 6 days?

66 If one man could reap half an acre in a day, how many men would be required to reap 12 acres in half a day?

67 If a man got 3*s.* for reaping an acre of wheat, how much would be got for reaping half an acre?

68 If one man was paid 3*s.* a day for reaping, how much would be due to 6 men, for half a day's reaping?

69 If a man got 18*s.* for reaping a certain field, how much must be given to each of two men, who helped him, and who were to share the money equally with him?

70 If there were thirteen remnants of calico, the first measuring one yard and a half; the next 5¾ yards; the next 4¼ yards; the next 1⅞ yd.; the next 2⅝ yards; and the last 5½ yards: how many yards were there altogether?

71 Suppose there were four pails of milk;—in the first pail, 3 galls. 3 qts. 2 pts.; in the second pail, 24 pts.; in the third pail, 4 galls. 2 qts.; in the fourth pail, 13 quarts.; how much milk was there altogether?

72 Find how much wine there would be in seven casks, containing the following quantities; 1 W. bar. 7 galls. 3 pts.—35 galls. 3 qts. 1 pt.—40 qts. —9 galls.—17 galls. 3 qts.—8 galls, 2 qts.—36 qts.?

73 There are two fields, one contains 5 acres, 1 rood and 16 poles; and the other contains 8A. 2R. 10P. what is the total quantity?

74 In measuring timber, it is common to take a piece of string, and mark how much it takes to go round the tree in the middle of its length:—they double this string in four, and measure it:—then they multiply this measure by itself, and the product by its length, which gives the quantity of timber contained in the tree. An oak lately cut down in Dorsetshire, produced a piece of timber 13 feet in length, and 8 feet 8 inches round the middle. Give me the number of cubic feet it contained by the rule just described.

75 Perhaps you will like to know how much was given for this noble tree. 1st. The huge trunk, of which you have just calculated the size, was sold to make a great vat, or tub, at 3s 6d the cubic foot. 2ndly. There were 70 feet of timber in the top and branches at 2s 6d the cubic foot. 3rdly. There were 23 cwt of bark at 8s the cwt; Lastly, the croppings were worth 50s for faggots.

# BILLS OF PARCELS.

London, 15th, Jan., 1829.

A. B. bought of C. D.

| | | | |
|---|---|---|---|
| 12½ yards of Carpeting at 2s. 8d. per yard. | 1 | 13 | 4 |
| 6 yards of ditto at 20d. per yard | 0 | 10 | 0 |
| 2 yards of Welsh Flannel at 8d. per yard | 0 | 1 | 4 |
| 1 best Hearth Rug at ... ... | 1 | 15 | 0 |
| | 3 | 19 | 8 |

London, 17th Sept., 1829.

1. E. F. bought of G. H.

| | | | |
|---|---|---|---|
| Souchong Tea, 3 lbs. at 6s. per lb. ... | 0 | 18 | 0 |
| Fine ditto 2 do. at 9s. per lb. ... | | | |
| East India do. 14 do. at 8d. per lb. ... | | | |
| Do. do. 14 do. at 7d. per lb. ... | | | |
| Rice, Ground 1½ do. at 6d. per lb. ... | | | |
| Chocolate ... ¼ do, at 3s. per lb. ... | | | |

2. I. K. bought of L. M.

| | s. | d. |
|---|---|---|
| 1 Dozen Mould Candles ... ... ... | 8 | 6 |
| 1 Dozen Dip do. ... ... ... | 7 | 0 |
| 14 Pounds of Yellow Soap, at 7d. ... ... | | |
| 7 Pounds of Mottled do., at 8d. ... ... | | |
| 1 Pound of Stone Blue, ... ... ... | 2 | 0 |
| 1 Bottle of Furniture Oil, ... ... ... | 1 | 0 |
| 1 Pint of Turpentine, ... ... ... | 1 | 0 |
| ½ Pound of Bees' Wax, ... ... ... | 1 | 9 |

3. N. O. bought of P. Q.

| 1829. | | | £. | s. | | £. | s. | d. |
|---|---|---|---|---|---|---|---|---|
| Jan. | 15 | ½ Load of Hay at | 4 | 4 | per load | | | |
| July | 3 | ¼ Do. do. at | 4 | 12 | do. | | | |
| Sept. | 7 | ¼ Do. do. at | 4 | 8 | do. | | | |
| Nov. | 10 | ¼ Do. do. at | 4 | 8 | do. | | | |

4. R. S. bought of T. U.

| | | | £. | s. | d. |
|---|---|---|---|---|---|
| East India Moist Sugar, | 14 lb. | at 7d. | | | |
| Do. Loaf Sugar, | 14 lb. | at 1s. | | | |
| Arrow Root ... ... | ½ lb. | at 2s. | | | |
| Best Figs, ... ... | 3 lb. | at 9d. | | | |

5. V. W. bought of X. Y. Z.

| 1830. | | | | £. | s. | d. |
|---|---|---|---|---|---|---|
| March 9 | ½ | chaldron of Coals | at 47s. | | | |
| — 10 | 4½ | do. do. | at 47s. | | | |
| Sept. 8 | 5¼ | do. do. | at 49s. | | | |
| — | 2½ | do. do. | at 49s. | | | |

6 12 pairs of cotton hose, at 30d.: 5 nightcaps at 1s. 3d.: 3 pairs of gloves at 3s. 3d.: a watch ribbon 10d.: 6 yards of flannel at 1s. 3d.: 3 pairs of gauze hose at 13d.: 3 wove flannel coats at 9s.

7 3 pounds of brown paper, at 15d.: ½ a quire of satin wove at 1s. 10d.: 3 sheets of bristol board at 1s. 9d.: 5 embossed cards at 2s.: ½ a gross of steel pens at 1s. 9d. per dozen: a handsome 12mo. Bible, bound in Morocco, 18s.

8 Eleven yards of satin at 5s. 8d.: 1 yard of velvet 18s.: 5 pairs of kid gloves at 2s. 2d : 2 straw hats at 30s.: 5 yards of ribbon at 2s. 8d.: 3 yards of straw-coloured crape at 3s. 8d.: a Tuscan grass bonnet 3*l.* 13s. 6d.: 2 gauze handkerchiefs at 15d.

9 Ten yards of dimity at 16d.: 19½ do. at 22d.: 6¼ at 16d.: a remnant of print at 2s. 6d.: 1¼ yards of quilting at 2s.: one yard, and five-sixteenths of a yard of quilting at 2s. 6d.: 49 yards of dimity at 11d : ½ a piece of bed lace at 5s 6d.

10 Five yards of print at 2s. 6d.: 12 yards of silk at 3s. 4d.: 11½ yards of rich silk at 4s. 6d.: 3 yards of pink muslin at 2s 8d: 2 pair of gloves at 2s: 6 lawn handkerchiefs at 2s: ¾ of a yard of crape at 3s: 6 yards of calico at 9d.

11 Five and a half yards of velvet ribbon at 13d: 2 yards of scotch cambric at 2s 4d: 7½ yards of flowered ribbon at 2s 8d: 26¾ yards of Irish at 2s 6d: 3 crape hkfs. (handkerchiefs) at 5s 6d: 20⅜ yards of calico at 10d: ½ lb. of thread at 2s.

12 Two ounces of spirits of hartshorn at 4d: ½ lb. of carbonate of soda at 1s: 3 oz. of magnesia at 6d: 4 oz. of powder of bark at 8d: 3 boxes of pills at 13d: ¼ lb. of cream of tartar at 1 shilling.

13 Seven pounds of yellow soap at 7½d: 14 lbs of mottled soap at 8¾d: 4 dozen of mould candles at 8s 9d: 6 dozen of rushlights at 7s 6d: 3 dozen of dip candles at 7s 3d; ¾ lb of stone blue at 2s.

## STOCK TAKING.

A tradesman can never know whether his business be profitable or ruinous, unless he keeps regular accounts and settles them once or twice a year. To do this thoroughly, he must not only balance the amount of money paid and received, but also take an account of the stock of goods, &c. which he has on hand: this is called "Stock-taking." I shall give one example stated and worked, in the way in which you are to do the rest.

### BRICKLAYERS' STOCK.

| | L. | S. | D. |
|---|---|---|---|
| 17 Yds. of Flags at 2s. 3*d*. | 1 | 18 | 3 |
| 36 Ton of slates at 16s. | 28 | 16 | 0 |
| Lime | 1 | 1 | 0 |
| 25 Curb Stones at 5s. 6*d*. | 6 | 17 | 6 |
| 100 Fire Bricks at 8s. the hundred | 0 | 8 | 0 |
| 1500 Common Bricks at 3s. the hundred | 2 | 5 | 0 |
| | 41 | 5 | 9 |

1 The valuation of a gardener's stock and crops was as follows. A glass frame, 30*s.*; water-barrow and sundry utensils, 3*l.*: ten sacks of early potatoes, at 5*s.*: 16 pecks of beans, at 2*s.*: 2 pecks of peas, at 4*s.*: vegetables growing, 9*l.*: small seeds, 2*l.* Half a ton of carrots, at 3*l.*: ten pecks of onions, at 2*s.*: apple trees, 70*l.*: a garden engine, 8*l.*: seed drawers, 10*s.*: 262 sacks of potatoes, at 5*s.*: 28½ bush. of apples, at 8*s.*

2 Suppose a woollen draper had 900 yds. of olive broad cloth at 6*s.*: 59 yds. of claret ditto, at 5*s.* 9*d.*: 134 yds. of French grey ladies' cloth, at 10*s.* 5*d.*: 300 yds. of scarlet coating at 5*s.* 3*d.*: 40 yds. of crimson nap, at 5*s.* 8*d.*: 20 yds. of drab pelisse cloth, at 4*s.* 9*d.*: 50 yds. of moreen, at 2*s.* 3*d.*, and 90 yds. of stuff damask, at 4*s.*: what would be the value of his stock?

3 A granary contained 1½ qr. of oats, at 16*s*,; 6 lasts of beans, at 12*s.*; 56 sacks, each worth 2*s.*; 2 qrs. of hay seeds, at 7*s.* 6*d.*; 15 forks, each worth 18*s.*; 2½ qrs. of barley, at 1*l.* 12*s.*; a bean mill, worth 1*l.*; a hay-spade, 3*s.* 6*d.*; swath-rake and hay-rakes, &c. worth 2*l.* 10*s.*; 2½ qrs. of lineseed, at 45*s.*; and 20 loads of old wheat, at 12*s.*

4 A tailor had on hand, 62 yds. of woollen cloth, at 4*s.* 3*d.*; 23 yds of cotton cord, at 1*s.* 9½; 37 yds. of buff nankeen, at 7½*d.*; 20½ yds. of twilled nankeen, at 11½*d.*; 22½ yds. of buckram at 10½*d.*; 10 gross of buttons, worth 8*s.* 10*d.*; 2½ lbs. of thread at 10*s.*: 1 lb. 5 oz. of twist, at 40*s.*; 2 tailors' geese, worth 11*s.* 6*d*,

5 In a shoemaker's shop were 22 lbs. of dintle, at 20*d.*; 43 lbs. of insole, at 1*s.* 3*d.*; 59 lbs. of dressed hides, at 2*s.* 6*d.*; 26 lbs. of kip, at 3*s.* 3*d.*; 31 lbs. of calf, at 3*s.* 5*d.*; 112 lbs. of sparables, at 3*d.*: welts worth 4*l.* 6*s.*; pitch and resin, worth 3*s.*; awl-blades and tacks, worth 7*s.*; and blacking worth 6*s.*

# PRACTICE.

As you get forward in Ciphering, you will not only be able to work long sums quickly, but you will learn many shorter ways of doing them. For instance, you are now come to a rule called Practice, because it is much used by tradesmen, and it teaches them several short methods of finding the value of their goods. The following Table is to be carefully attended to.

15*s* are three-fourths of a pound
13*s* 4*d* are two-thirds of a pound
10*s* are one half of a pound
6*s* 8*d* are one third of a pound
5*s* are one fourth of a pound
4*s* are one-fifth of a pound
3*s* 4*d* are one-sixth of a pound
2*s* are one-tenth of a pound
1*s* 8*d* are one-twelfth of a pound

9*d* are three-fourths of a shilling
8*d* are two-thirds of a shilling
6*d* are one-half of a shilling
4*d* are one-third of a shilling
3*d* are one-fourth of a shilling
2*d* are one-sixth of a shilling
1½*d* are one-eighth of a shilling

Suppose you were asked what 32 penknives cost, if they are 2*s* 6*d* a piece. You can find out by Compound Multiplication in this manner.

*s*. *d*.
2 6
4 × 8

10 0
8

4 0 0 Answer.

But by Practice, it may be done very shortly indeed. For if you know that 2s. 6d. is $\frac{1}{8}$ part of a pound, you have only to divide £32 by 8, and you have the answer directly.

8 ) 32  
——  
£4 Answer.

Have a little patience, and I hope to make you understand this.

Twice one-half of a pound, is one pound.  
3 times one-third of a pound, is one pound.  
4 times one-fourth of a pound, is one pound.  
5 times one-fifth of a pound, is one pound.  
6 times one-sixth of a pound, is one pound.  
8 times one-eighth of a pound, is one pound.  
10 times one-tenth of a pound, is one pound.  
12 times one-twelfth of a pound, is one pound.

Now if 8 times one-eighth of a pound, is £1.  
16 times one eighth of a pound, is £2.  
24 times one-eighth of a pound, is £3.  
32 times one-eighth of a pound, is £4.

This shows us that  
8 times $\frac{1}{8}$ of a pound is $\frac{1}{8}$ of 8*l.* that is, it is 1*l.*  
16 times $\frac{1}{8}$ of a pound is $\frac{1}{8}$ of 16*l.* that is, it is 2*l.*  
24 times $\frac{1}{8}$ of a pound is $\frac{1}{8}$ of 24*l.* that is, it is 3*l.*  
32 times $\frac{1}{8}$ of a pound is $\frac{1}{8}$ of 32*l.* that is, it is 4*l.*

Take any part of a pound you please, you may speak of it in this manner. 8 times $\frac{1}{4}$ of a pound is the same as $\frac{1}{4}$ of 8*l.*; 10 times $\frac{1}{3}$ of a pound is the same as $\frac{1}{3}$ of 10*l.* I will show these two examples worked.

| | *s.* | £. |
|---|---|---|
| $\frac{1}{4}$ of a £ is | 5 | 4 ) 8 |
| | 8 | — |
| | —— | £2 |
| £2 | 0 | |

| | | | |
|---|---|---|---|
| | *s.* *d.* | | £. |
| ⅓ of a £ is | 6 8 | 3 ) | 10 |
| | 10 | | £3 6 8 |
| | £3 6 8 | | |

Try a few examples for yourself.

41 pairs of gloves, at 4*s* a pair?

As 4*s.* is one-fifth of a pound, the gloves will cost one-fifth of 4*l.*

39 pairs of shoes at 6*s.* 8*d.* a pair.

As 6*s.* 8*d.* is ⅓ of a pound, the shoes will cost ⅓ of 39*l.*

1. 300 yds of broad cloth at 10*s.* the yard.
2. 313 days' work at 2*s.* a day.
3. 8 gross of buttons at 1*s.* 8*d.* the dozen.
4. 15 gross of buttons at 1*s.* 8*d.* the dozen.
5. 59 yards of ladies' cloth at 6*s.* 8*d.* the yard.
6. 313 days' work at twenty-pence a day.
7. 365 days' board at 2*s.* a day.
8. 43 days' board wages at 1*s.* 8*d.* a day.
9. 364 days' board wages at twenty-pence a day.
10. 1000 penknives at 1*s.* 8*d.* each.
11. 144 pairs of sissors at 3*s.* 4*d.* the pair.
12. 144 pairs of gloves at 2*s.* 0*d.* per pair.
13. 49000 yds of calico at 1*s.* 8*d.* per yard.
14. 5960 pr. of gloves at 1*s.* 8*d.* the pair.
15. 100 bundles of pens at 2*s.* the bundle.
16. 10000 pens at 2*s.* the hundred.
17. 12000 pens at 3*s.* 4*d.* the hundred.
18. 20 chairs at 6*s.* 8*d.* each.
19. 50 yards of persian at twenty-pence a yard.
20. 24 pounds of wax candles at 2*s.* the pound.
21. 214 pounds of imperials at 1*s.* 2*d.* the pound.
22. Weekly parish allowance to 60 paupers at 1*s.* 8*d.* each.
23. Subscription of 100 persons at 5*s.* each.
24. Allowance of 5*s.* to 200 persons.
25. 144 pieces of muslin at 10*s.* the piece.
26. 144 pieces of ribbon at 3*s.* 4*d.* the piece.
27. 144 pieces of ribbon at 6*s.* 8*d.* the piece.

28 21 yards of silk at 4*s*. the yard.
29 19 yards of flowered silk at 10*s*. the yard.
30 48 pr. of shoes at 5*s*. the pair.
31 36 pr. of boots at 3*s*. 4*d*. the pair.
32 33 yds of merino at 2*s*. the yard.
33 150 hair brushes at 3*s*. 4*d*. each.

---

The fractions or Aliquot parts of a shilling, are used in the same manner.

281 yards of cotton, at 6*d*. a yard.

As 6*d*. is ½ of a shilling, the cotton will cost ½ of 281 shillings.

```
         s.
    2 ) 281
        ———
  2,0 ) 14,0s. 6d.
        ————————
        £7 0s. 6d.  Answer.
```

341 pounds of treacle, at 4*d*. a pound.

As 4*d*. is ⅓ of a shilling, the treacle will cost ⅓ of 341 shillings.

```
         s.
    3 ) 341
        ———
  2,0 ) 11,3s. 8d.
        ————————
        £5 13s. 8d.  Answer.
```

34 55 pecks of young potatoes at 3*d*. the peck.
35 120 lbs. of sugar at 6*d*. the lb.
36 125 lemons at 2*d*. each.
37 53 sheets of pasteboard at 4*d*.
38 144 copy books at 8*d*.
39 Eight dozen penknives at 9*d*.
40 400 pens at 2*s*. 8*d*. the hundred.
41 A gross of thimbles at 3*d*. each.
42 3 gross of buttons at 2*d*. each.
43 590 yards of blue ribbon at 6*d*. a yard.
44 To the post-boy for driving 16 miles at 3*d*. a mile.
45 30 yards of calico at 4*d*. the yard

46 A pint of ale at 2*d.* the pint every day for a year. What would it come to?

47 What does 6*d.* a week come to in a year?
48 What does 2*d.* a week come to in the year?
49 What does 9*d.* a week come to in the year?
50 1000 pots of blacking at 8*d.*
51 Five dozen plates at 9*d.* each.
52 Four score oranges at 2*d.* each.
53 49 dozen of apples, at 9d. the dozen.
54 4000 quarts of soup at 4*d.* the quart.
55 800 quarts of milk at 3*d.* the quart.
56 354 miles' posting at 2*s.* 3*d.* the mile.

57 If a family use 2*s.* 6½*d.* worth of butter, on an average in a week, how much will it amount to in twenty years?

58 If a person allows himself on an average 5*s* 6*d.* a week, for pocket money, how much does he spend in a year?

59 What is the sum, which will last for a year, if spent at the rate of 13*s.* 4*d.* a week?

60 What would be the expense of a journey by stage coach of 260 miles, if the fare was 4½*d.* a mile, the fees to drivers, guards, and waiters, and eating 1¼*d.* per mile?

61 16 lbs. of salmon at 2*s.* 6*d.* the lb.
62 12 reams of paper at 1*s.* 4*d.* the quire.
63 100 bibles at 6*s.* 8*d.* each
64 50 testaments at 2*s.* 4*d.* each.
65 6 dozen* (pounds) of candles at 7*d.* the pound.
66 3 dozen of moulds at 9*d.* the pound.
67 400,000,000 yards of cotton are sometimes sold in Great Britain and Ireland in a year. What would be the cost of this quantity at the average price of 16 pence a yard?
68 Wages for 30 men at 15*s.* 6*d.* each.
69 A year's board at 13*s.* 8*d.* per week.

---

* A dozen of candles always means a dozen *pounds* of candles; of course, the larger the candles, the fewer there will be in the pound. Thus "a dozen of sixes" means a dozen *pounds* of candles, 6 to the lb.

I have not yet set you any questions with 15*s.* or 13*s.* 4*d.* for the price, for fear of puzzling you. Yet these prices are very nearly as easy to work, as those you have just done.

Find the value of 28 hats, at 15*s*. apiece.

As 15*s.* is $\frac{3}{4}$ of a pound, 28 times 15*s.* is $\frac{3}{4}$ of £28.

£.
28
3
4 ) 84
Answer. £21

25 Mahogany Chairs, at 13*s.* 4*d.* apiece?

As 13*s.* 4*d.* is $\frac{2}{3}$ of a pound, 25 times 13*s.* 4*d.* is $\frac{2}{3}$ of £25.

£.
25
2
3 ) 50
£16 13*s.* 4*d.* Answer.

9*d.* which is $\frac{3}{4}$ of a shilling, and 8*d.* which is $\frac{2}{3}$ of a shilling, are worked in a similar manner.

50 yards at 9*d.* a yard.

As 9*d.* is $\frac{3}{4}$ of a shilling, 50 times 9*d.* is $\frac{3}{4}$ of 50 shillings.

*s.*
50
3
4 ) 150
2,0 ) 3,7*s.* 6*d.*
£1 17*s.* 6*d.* Answer.

62 pounds of sugar, at 8*d.* a pound.

As 8*d.* is ⅔ of a shilling, 62 times 8*d.* is ⅔ of 62 shillings.

*s.*
62
2

3 ( 124

2,0 ) 4,1*s.* 4*d.*

£2 1*s.* 4*d.* Answer.

70 Wages to 19 men at 15*s.*
71 Passage money in a steam-boat for 160 passengers at 13*s.* 4*d.*
72 550 young geraniums at 9*d.* each.
73 25 pieces of calico of 30 yds. each, at 8*d.* per yd.
74 100 yds. of broad cloth at 13*s.* 4*d.*
75 300 yds. of broad cloth at 15*s.* 9*d.*
76 20 yds. of broad cloth at 15*s.* 8*d.*
77 35 days' wages at 9*d.* the day to three boys.
78 28 yds. of ribbon at 9*d.* the yard.
79 25 pieces of tape at 8*d.*
80 365 dinners at 9*d.*
81 52 weeks' board at 15*s.* a week.
82 52 weeks' wages at 13*s.* 4*d.* the week.
83 200 copies of a book at 15*s.*
84 Three dozen skeins of netting-silk at 9*d.*
85 Four doz. pair of child's socks at 8*d.* the pair.
86 18 lbs. of cheese at 4*d.* the lb.

To find the value when the price is only farthings, you have very little to do, but to reduce the farthings to pence and shillings. Here are some examples.

| | |
|---|---|
| 121 at ¼d. | 233 at ½d. |
| 4 ) 121 farthings | 2 ) 233 halfpence. |
| 12 ) 30¼ pence. | 12 ) 116½ pence. |
| Answer 2s. 6¼d. | Answer 9s. 8½d. |

650 at ¾d.

650
3

4 ) 1950 farthings.

12 ) ·487½ pence.

20 ) ·4,0s. 7½d.

Answer £. 2 0s. 7½d.

The last Example may be worked in a different way.

¾d. may be divided into ½d. and ¼d.

½d | ½ | 650

¼d | ½ | 325 pence : value at ½d.
162½ pence : value at ¼d.

12 ) 487½ pence : value at ¾d.

2,0 ) ·4,0s. 7½d.

Answer £.2 0s. 7½d.

650 at 1d. each, would come to 650 pence; but 650 at ½d. each, is only half as much, that is 325 pence; and 650 at ¼d. each, is only half as much as that, which is 162½ pence. 325 pence is the value at ½d. and 162½ pence is the value at ¼d. Both added together, make the value at ¾d.

87 144 balls of cotton at 1 farthing.
88 300 slate pencils at 1 farthing.
89 60 balls at 1 halfpenny.
90 28 gingerbread nuts at 1 farthing.
91 15 eggs at 3 farthings.
92 1000 bundles of fire wood at 1 halfpenny.
93 950 apples at three-farthings.

94 A gross of buttons at 1 halfpenny.
95 500 tobacco pipes at one farthing.
96 48 plates at three-farthings.
97 360 yards at three-farthings.
98 What does a halfpenny a day amount to in a year?
99 What is the amount of a farthing a day in a year?
100 If a person used three-farthings worth of snuff in a day, how much does it come to in a year?
101 If a brass hook cost three-farthings, what would be the worth of 50 of them?
102 3 dozen of oysters ¾d each.
103 What is the worth of 20,000 bricks at a ½ each?
104 Find the worth of 1,000 best bricks at ¾ each.
105 Carriage of a box for 198 miles at ¾ the mile.

When the price is pence and farthings.

Find the value of 750 at 7¾d.

```
  6d | ½ |750
         |-----
 1½d | ¼ |375s. value at 6d.
  ¼d | ⅙ |  93s. 9d. value at 1½d.
            15s. 7½d. value at ¼d.
          ---------
    2,0 ) 48,4s.4½d. value at 7¾d.
          -----------
```

Answer £.24,4s. 4½d

As 6d. is ½ of a shilling, 750 times 6d. is ½ of 750 shillings, which is 375 shillings.

As 1½d. is ¼ of 6d., 750 times 1½d, is ¼ of 750 times 6d, or 375 shillings, which is 93s. 9d.

As ¼d. is one-sixth of 1½d, 750 times ¼d is one-sixth of 750 times 1½d, or 93s. 9d, which is 15s. 7½d.

The several values, at 6d, 1½d, and ¼d, added together, make up the value at 7¾d.

106 40 yards of blue ribbon at 5¼d the yard.
107 11 pounds of beef at 7¾d the pound.
108 20 yards of calico at 7½d the yard.
109 18 pounds of mutton at 6½d the pound.

110 24 lemons at 1¾d each.
111 140 yards of paper-hangings at 5½d the yard.
112 300 yards of paper-hangings at 7½d per yard.
113 14 pounds of sugar at 6¼d. per pound.
114 112 pounds of sugar at 8½d. per pound.
115 22 pounds of refined sugar at 11½d. per pound.
116 30 yards of gingham at 9½d. per yard.
117 29 yards of unbleached calico at 5¾d. per yard.
118 15 knots of cotton-cord at 5¼d. the knot.
119 144 balls of pack-thread at 2½d.
120 14 skeins of silk at 1½d. the skein.
121 26 bunches of matches at 1½d. the bunch.
122 23 pints of nuts at 4½d. the pint.
123 42 peaches at 3½d. each.
124 15 pounds of cherries at 2½d. the pound.
125 Suppose a person used 1¾d. worth of snuff in a day, how much would it come to in a year?
126 160 yards of calico at 10½d. a yard.
127 646 square yards of house-painting at 13½*d*. the square yard.

---

When the price is Shillings, Pence and Farthings.

Find the value of 249 at 14s. 6½d.

14s. 6½d. may be divided into 10s., 4s., 6d., and ½d.

| | | | |
|---|---|---|---|
| 10s. | ½ | 249 | |
| 4s. | $\frac{1}{5}$ | 124*l*. 10*s*. | ......value at 10*s*. |
| 6d. | $\frac{1}{8}$ | 49*l*. 16*s*. | ......value at 4*s*. |
| ½d. | $\frac{1}{12}$ | 6*l*. 4*s*. 6*d*. | ..value at 6*d*. |
| | | 10*s*. 4½*d*. | ..value at ½*d*. |
| Answer. | | £181 0 10½ | value at 14*s*. 6½*d*. |

As 10*s*. is ½ of a pound, 249 times 10*s*. must be ½ of 249*l*, which is 124*l*. 10*s*.

As 4*s*. is one-fifth of a pound, 249 times 4*s*. must be one-fifth of 249*l*., which is 49*l*. 16*s*.

As 6*d*. is ⅛ of 4*s*., 249 times 6*d*. must be ⅛ of 249 times 4*s*., or 49*l*. 16*s*., which is 6*l*. 4*s*. 6*d*.

As ½*d*. is $\frac{1}{12}$ of 6*d*., 249 times ½*d*., must be $\frac{1}{12}$ of 249 times 6*d*., or 6*l*. 4*s*. 6*d*. which is 10*s*. 4½*d*.

The several values at 10*s*., 4*s*., 6*d*., and ½*d*., make up the whole value at 14*s*. 6½*d*.

128 100 yards of Irish linen at 2s. 9½d. the yard.
129 40 days' labour at an average of 6s. 6½d. per day.
130 Wages for 30 men at 15s. 6d.
131 Printing of 500 copies of a book at 5s. 3½d. each.
132 What would be the worth of a salmon weighing 14 pounds at 1s. 8½d. a pound?
133 How much must I pay for 18 pairs of stockings at 2s. 2½d. the pair?
134 If one dozen of combs may be had for 1s. 3½d., much would twenty dozen cost?
135 If one pound of refined sugar cost 1s. 1½d., what would 19 pound cost?
136 50 pairs of shoes at 5s. 4¾d. a pair.
137 90 couples of fowls at 2s. 3½d. the couple.
138 100 couples of ducks at 3s. 9¾d. the couple.
139 26 turkeys at 8s. 8½d. each.
140 18 pounds of salmon at 2s. 4¼d. the pound.
141 16 pounds of salmon at 2s. 8½d. the pound.
142 Travelling expenses for 240 miles at 2s. 6½d. the mile.

---

When the price is Pounds, Shillings and Pence.

Find the value of 131 at 1*l*. 12*s*. 6*d*. each.

1*l*. 12*s*. 6*d*. may be divided into 1*l*., 10*s*. and 2*s*. 6*d*.

| | | | |
|---|---|---|---|
| 10*s*. | ½ | 131*l*. | ..........value at 1*l*. |
| 2*s*. 6*d*. | ¼ | 65 10*s*. | ......value at 10*s*. |
| | | 16 7*s*. 6*d*. | ..value at 2*s*. 6*d*. |
| Answer. | | 212*l*. 17*s*. 6*d*. | value at 1*l*. 12*s*. 6*d*. |

131 times one pound, is of course 131*l*.

As 10*s*. is one-half of a pound, 131 times 10*s*. is half of 131*l*., which is 65*l*. 10*s*.

As 2*s*. 6*d*. is ¼ of 10*s*., 131 times 2*s*. 6*d*., is ¼ of 131 times 10*s*., or 65*l*. 10s., which is 16*l*. 7*s*. 6*d*.

All the three values added together, make up 131 times 1*l*. 12*s*. 6*d*.

I shall work another Example.

428 at 3*l*. 17*s*. 4*d*.

3*l*. 17*s*. 4*d*. may be divided into 3*l*., 10*s*., 5*s*., 2*s*.. and 4*d*.

428
3

| | | | |
|---|---|---|---|
| 10*s*. | ½ | 1284*l*. | the value at 3*l*. |
| 5*s*. | ½ | 214 | the value at 10*s*. |
| 2*s*. | ⅕ | 107 | the value at 5s. |
| 4*d*. | ⅙ | 42 16*s*. | the value at 2*s*. |
| | | 7 2*s*. 8*d*. | the value at 4*d*. |
| Answer. | | 1654*l*. 18*s*. 8*d*. | the value at 3*l*. 17*s*. 4*d*. |

This Example is a little different from the one before it. First there are 3*l*. in the price, instead of 1*l*. The value at 1*l*. would be 428*l*., but at 3*l*. it is three times as much, which is 1284*l*.

In taking the Aliquot parts, I say 10*s*. is one half, but I mean one half of 428*l*. not of 1284*l*. I have taken one half of 428*l*. the line at the top.

5*s*. is half of 10*s*. That is plain enough.

Then 2*s*. is one-fifth. I do not mean 2*s*. is one-fifth of 5*s*. but one-fifth of 10*s*. and you see I have taken one-fifth of 214*l*. the value at 10*s*.

4*d*. is one-sixth of 2*s*.

As before, these values taken together, make the whole value at 3*l*. 17*s*. 4*d*.

In sums like this, you must try to divide the whole price into parts, in a similar manner, and work the different parts, one after another, till you have got through the whole price.

143 What would be the cost of a carpet, 9 breadths wide, each breadth being 11 yards long, at the price of 4s. 6d. the yard?

144 Suppose the average weekly expenditure of a gentleman's family to be 7*l.* 16*s.* 5½*d.* what would be his expences for the year?

145 What must that sum of money have been which when divided amongst 150 persons, yielded each of them 67*l.* 18*s.* 4¼*d*?

146 125 pieces of Irish linen at 2*l.* 12*s.* 11¾*d.*

147 Travelling expenses, for a journey of 126 days, at an average of 2*l.* 15*s.* 4½*d.*

148 219 days travelling at an average of 1*l.* 19*s.* 9¼*d.*

149 Three dozen (bottles) of sherry at 3*s* 6*d* per bottle.

150 Five dozen of port at 4*s.* 8*d.* per bottle.

151 A dozen and a half of Lisbon at 4*s.* 3*d.* the bottle.

152 112 pair of cotton stockings at 2*s.* 3*d.* the pair.

153 48 pair of gauze hose at 1*s.* 3*d.* the pair.

154 9 dozen of night-caps at 9*d.* each.

155 7 dozen of shirts at 8*s.* 8*d.* each.

156 12 dozen pairs of gloves at 3*s.* 4*d.* the pair.

157 15 dozen pairs of shoes at 6*s.* 8*d.* the pair.

158 5963 yards of muslin at 3*s.* 4*d.* the yard.

159 A year's wages to 59 workmen, at an average of 13*s.* 5½*d.* to each for the week?

160 Travelling expenses for 390 miles, at 2*s.* 11½*d.* the mile.

161 If a person drank, on an average, as much wine every day as cost him 1*s.* 8*d.* what would he have to pay at the end of the year?

162 Tell me what would be the yearly income of that person who received on an average 3*s.* 4*d.* a day?

163 Suppose an importer of Leghorn hats, sells 4050 in a season, and gets a profit of 1s. 8d. on each, what does he get by this branch of his business?

164 If a tradesman's daily profits average the sum of 13s. 4d., what may he expect to gain in the year?

165 Suppose a warehouse had been burnt down, in which it was calculated that there were 483950 yards of silk, at the average price of 5s. the yard, what would be the total loss sustained?

166 If a girl earns a shilling a day at sewing, and her needles, pins and thread cost her at the rate of a halfpenny per day, how much will she get in 16 weeks?

167 If I have five pails of milk, and in each pail four gallons, worth eight-pence per gallon, how much will the milk be worth?

168 Ten yards of print at one and twenty-pence the yard.

169 What will be the worth of 365 gallons of beer, at ten-pence the gallon?

170 Eleven yards and a half of silk, at six and three-pence halfpenny the yard.

171 What must a shopkeeper give for 175 pair of gloves, at one and eight-pence halfpenny the pair.

172 3 dozen pair of shoes, at four shillings and three-pence per pair.

173 Fifty and a half yards of linen, at twenty-pence.

174 Fifty yards of print at 1s. 4½d.

175 Twelve dozen and a half of apples, at fourteen-pence the dozen.

176 Nineteen bonnets, at one and three-pence three-farthings apiece.

177 Fifty-eight pints of milk, at one-penny farthing the pint.

178 Thirty-five pounds of tea, at five and sixpence.

There is only one more kind of sums in this rule, which I shall give you to do. First read the following Table:—

10 Hundredweight are half of a Ton.

5 Hundredweight are one quarter of a Ton.

4 Hundredweight are one-fifth of a Ton.

2 and a ½ Hundredweight are one-eighth of a Ton.

2 Hundredweight are one-tenth of a Ton.

14 Pounds are one half of a Quarter of a hundredweight.

7 Pounds are one quarter of a Quarter of a hundredweight.

4 Pounds are one-seventh of a Quarter of a hundredweight.

3 and a half Pounds are one-eighth of a Quarter of a hundredweight.

2 Quarters, or 56 pounds, are one half of a Hundredweight.

1 Quarter, or 28 pounds, are one-fourth of a Hundredweight.

16 Pounds are one-seventh of a Hundredweight.

14 Pounds are one-eighth of a Hundredweight.

8 Ounces are one half of a Pound.

4 Ounces are one quarter of a Pound.

2 Ounces are one-eighth of a Pound.

Find the value of 2 cwt. 2 qrs. 21 lbs. of sugar, at 2*l.* 15*s.* 6*d.* for a hundredweight.

2 cwt. 2 qrs. 21 lbs., may be divided into 2 cwts., 2 qrs., 14 lbs., and 7 lbs.

| | | L. | S. | D. | |
|---|---|---|---|---|---|
| | | 2 | 15 | 6 | value of 1 cwt. |
| | | | | 2 | |
| 2 qrs. | ½ | 5 | 11 | 0 | value of 2 cwt. |
| 14 lbs. | ¼ | 1 | 7 | 9 | value of 2 qrs. |
| 7 lbs. | ½ | | 6 | 11¼ | value of 14 lbs. |
| | | | 3 | 5½ | value of 7 lbs. |
| Answer. | | £7 | 9 | 1¾ | value of 2 cwt. 2 qrs. 21 lbs. |

2*l.* 15*s.* 6*d.* is the value of 1 cwt. Twice that, namely, 5*l.* 11*s.*, is the value of 2 cwt.

2 qrs. are one half of a cwt., so I take half of 2*l.* 15*s.* 6*d.*, the value of 1 cwt., which gives 1*l.* 7*s.* 9*d.* for the value of half a cwt.

14 lbs. is one-fourth of 2 qrs,; I take one quarter of 1*l.* 7*s.* 9*d.*, the value of 2 qrs., which gives 6*s.* 11¼*d.* for the value of 14 lbs.

7 lbs. is half of 14 lbs. I take half of 6*s.* 11¼, the value of 14 lbs., which gives 3*s.* 5½*d.* for the value of 7 lbs.

The values of these several quantities added together, make up the value of 2 cwt. 2 qrs. 21 lbs.

179 1 cwt. 3qrs. and 7 lb. of raw sugar at 56s. per cwt.
180 5 cwt and 14 lb. of East India do. at 84s. ditto.
181 3 loaves of refined sugar, each weighing 7 lb. at 96s. per cwt.
182 3 cwt. 1 quarter, and 7 lb. of Carolina rice at 40s. per cwt.
183 1 cwt. 3 qrs. and 14 lb. of treacle at 47s. ditto.
184 6 cwt. 2 qrs. and 7 lb. of Malaga raisins at 66s. per cwt.
185 1 cwt. 3 qrs. and 21 lb. of currants at 96s. ditto.
186 21 lb. of jar raisins at £5 per cwt.
187 7 lb. of loaf sugar at 105s. per cwt.
188 12 cwt. 1 qr. and 21 lb of cheese at 58s. per cwt.
189 6 cwt. 2 qrs. and 7 lb. of Butter at 98s. per cwt.
190 3 cwt 2 qrs. and 14 lb. of salt at 6s. per cwt.
191 4 cwt 1 qr. and 7 lb. of pitch at 24s. per cwt.
192 1 cwt 1 qr. and 14 lb. of soap at 58s. per cwt.
193 7 lb. of yellow soap at 56s. per cwt.
194 7 lb. of mottled soap at 60s. per cwt.
195 7 lb. of white soap at 66s. per cwt,

## A YOUNG MAN'S ACCOUNT BOOK.

Page 1.

| 1830. RECEIVED. | L. | S. | D. |
|---|---|---|---|
| Halfyears' allowance,........... | 3 | 0 | 0 |
| A gift from my father for extra work,........... | 0 | 10 | 0 |
| | 3 | 10 | 0 |
| Spent... | 2 | 13 | 0 |
| Remains £. | 0 | 17 | 0 |

Page 2.

| 1830. EXPENDED. | S. | D. |
|---|---|---|
| Shoes, ... ... ... | 8 | 0 |
| Stockings, 2 pair, ... | 5 | 6 |
| Hat... ... ... ... | 10 | 6 |
| Washing, ... ... | 9 | 3 |
| Shirts, ... ... ... | 12 | 0 |
| Given to a poor family | 2 | 6 |
| Books ... ... ... | 3 | 0 |
| Paper, ... ... ... | 1 | 6 |
| Pens and Ink, ... | 0 | 9 |
| £.2 | 13 | 0 |

### Page 3.

| RECEIVED. | L. | S. | D. |
|---|---|---|---|
| Money in hand... | 0 | 17 | 0 |
| Half year's allowance | 3 | 0 | 0 |
| For extra work, ... | 0 | 12 | 0 |
| Spent | | | |
| Remains | | | |

### Page 4.

| SPENT. | L. | S. | D. |
|---|---|---|---|
| Cloth for clothes | 2 | 0 | 0 |
| Tailor's bill, ... | 1 | 6 | 0 |
| Knife,... ... ... | 0 | 1 | 3 |
| Purse,... ... ... | 0 | 0 | 6 |
| Subscription to a school for poor boys | 0 | 1 | 0 |
| Washing, ... ... | 0 | 10 | 0 |

### Page 5.

| 1831. RECEIVED | L. | S. | D. |
|---|---|---|---|
| Money in hand... | 0 | | |
| Half year's allowance, ...... | 3 | 0 | 0 |
| Present from my Grandfather... | 2 | 0 | 0 |
| Spent | | | |
| Remains in hand | | | |

### Page 6.

| SPENT. | L. | S. | D. |
|---|---|---|---|
| Two pair of Shoes | 0 | 18 | 0 |
| Washing, ... ... | 0 | 11 | 4 |
| Paper,... ... ... | 0 | 1 | 6 |
| Book,... ... ... | 0 | 1 | 9 |
| Stockings ... ... | 0 | 3 | 0 |
| Linen for Shirts, | 0 | 6 | 10 |
| Making ditto... | 0 | 3 | 6 |
| Great Coat, ... ... | 2 | 10 | 0 |
| Muslin neckcloths | 0 | 3 | 0 |
| Neck handkerchief | 0 | 2 | 6 |

THE END.

ELCOCK, PRINTER, PONTEFRACT.